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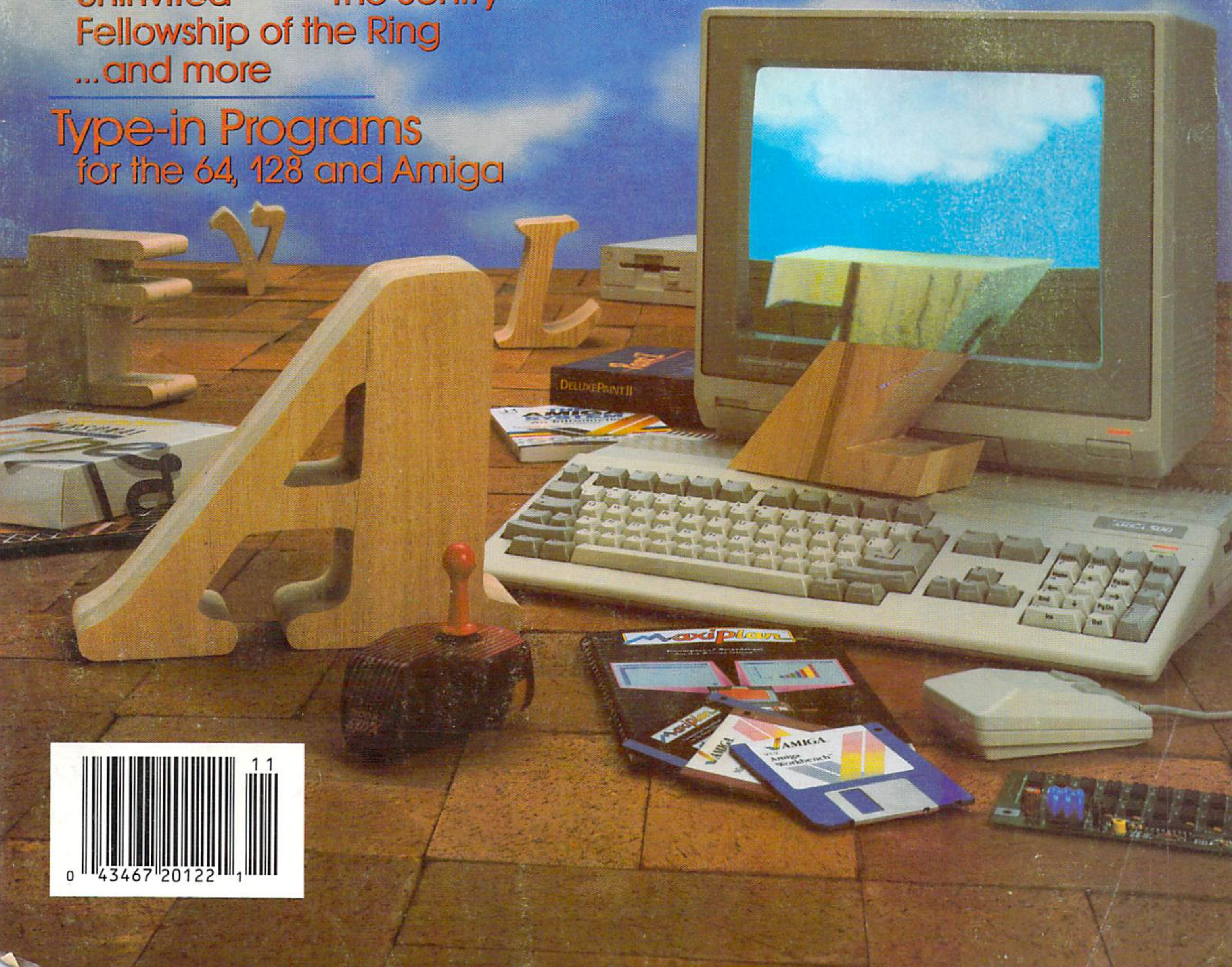
Commodore MAGAZINE

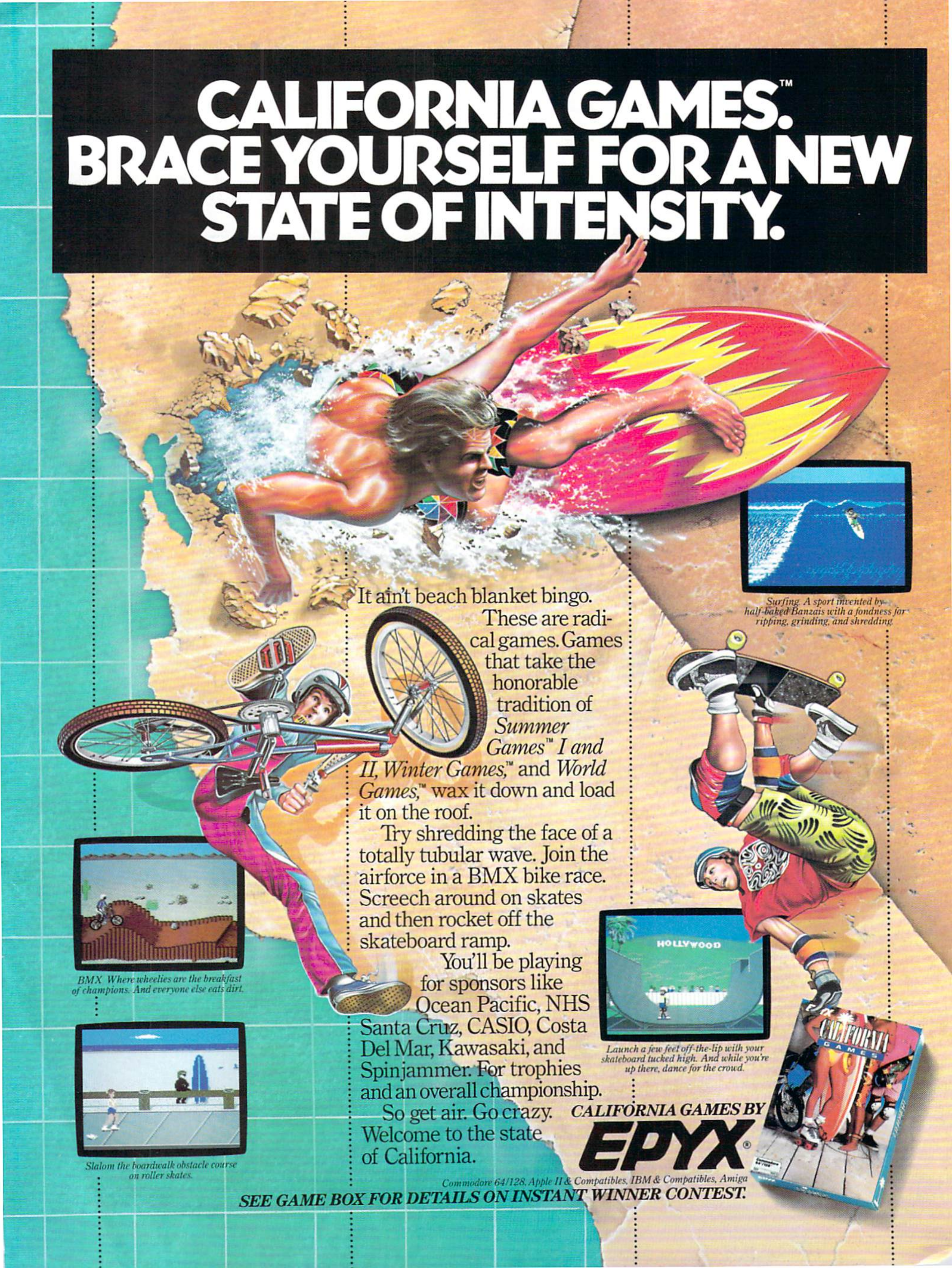
Amiga 500 A-Z

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*For more information, or the name of the dealer nearest you call: **1-800-343-4074.***

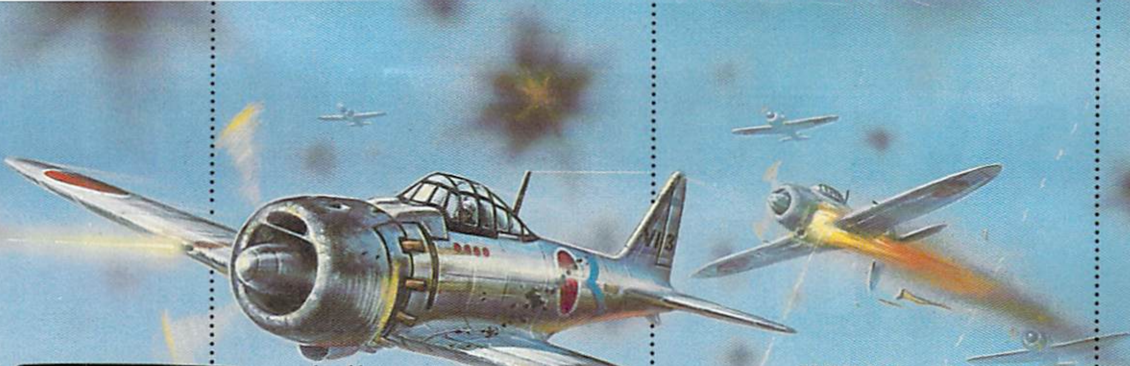




PSI

Professional Software, Inc.
51 Fremont Street
Needham, MA 02194
(617) 444-5224

Fleet System 2+, 4 and Fleet Filer are designed and written by Visiontronics Group Inc.
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The time: 1400 hours. Somewhere in the Pacific. Some ill-fated coordinates in World War II.



Damage Control reports a hit on the starboard side. Send in Alpha, Baker and Charlie to repair.

eyeball to eyeball action. This time around you'll be right in the middle of it all. You knew it wouldn't be pretty.

But how tough could it be to rescue a downed pilot?

Will it be the twin 40mm Bofors anti-aircraft guns? Or the 5″ lead-spewers aft? Depth charges or torpedoes? Autopilot or guts?

LIFE, LIBERTY AND THE HAPPINESS OF PURSUIT.



Radar spots inbound Zeroes. Ready forward gunnery positions. Man the anti-aircraft turrets. They're coming

You're at the helm, commanding the greatest concentration of firepower ever put in a lightweight fighter. The deadly Fletcher Class Destroyer.

You've embarked on the first simulation that actually combines the intricate, large-scale strategy of wargaming with the intensity of furious,

It sure seemed a lot easier than shelling islands, escorting a convoy or hunting subs.

Or so you thought. But now look what you've got. Thirteen fully-operational, earbursting battle stations to worry about, all armed to the gills. Not to mention radar. Navigation. Sonar.

And half the Japanese fleet crawling up your spine.

Time to make some tactical decisions.

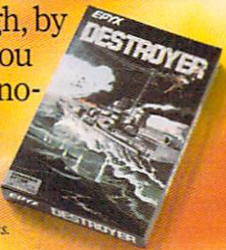
YOU'VE ALWAYS DREAMED OF BEAUTIFUL MODELS. Now you can pick up an entire assault fleet, including a replica Fletcher Class Destroyer, from Revell. Or win an authentic scrambled eggs *flight deck cap. Sweepstakes details are in every box, or write for an entry coupon. No purchase necessary. Sweepstakes ends June 15, 1987. Official rules are available at participating dealers.*

Any choice could be your last, so make it good.

Suddenly, you hear the ominous rumble of incoming Zeroes. You fire, and send one plummeting to the sea, trailing a plume of smoke.

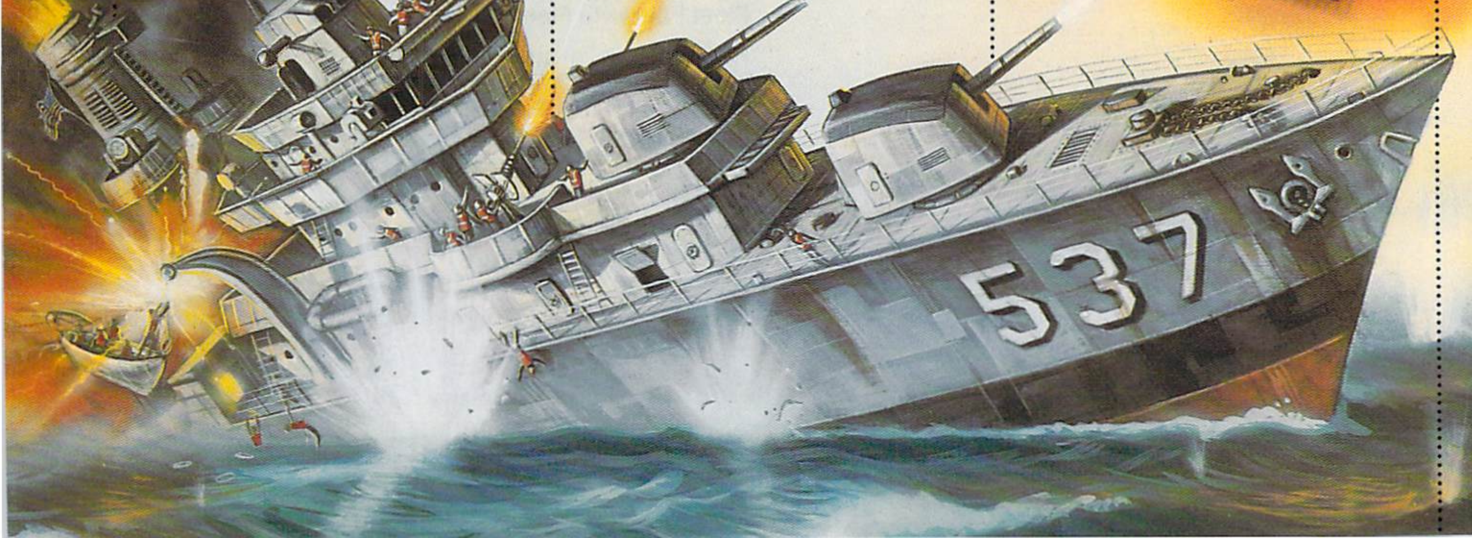
On instinct, you instruct the bridge to commence evasive maneuvers.

Even though, by experience, you know there's nowhere to run.



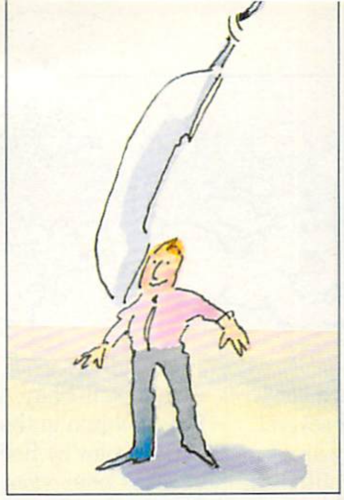
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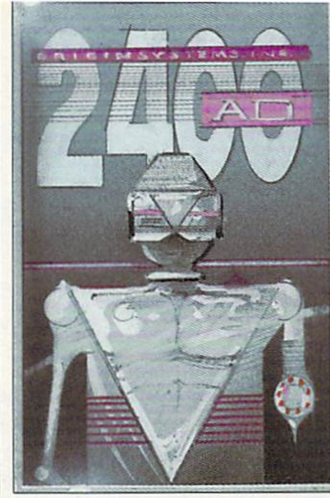


Commodore MAGAZINE

NOVEMBER 1987, *Volume 8, Number 11*



72



78

FEATURES

COVER STORY

COVER PHOTO: *Charles Bartholomew*
Computer Graphics: *Richard Payne*
Models: *Jeff Kahn*

DEPARTMENTS



To the Editor:

I have been attempting to find a bowling league secretary program for several months. None of the stores in my area have it or know where to find it, although they all seem to think it should be readily available.

I'm getting desperate. My wife starts her duties as a league secretary in about a month. She is not a computer user, so she needs a program that is user-friendly, not just a spreadsheet.

Can you help? I have a Commodore 64, one disk drive, color monitor and an Epson MX80FT printer.

Sincerely,
John Robertson
Orlando, FL

Editorial Response: Bowler handles league secretary duties for up to 100 bowlers and 22 teams and is available for $39.95 from Raymond Reynolds, 384 Hyacinth Street, Fall River, MA 02720.

To the Editor:

I am writing to you as Public Relations representative of a Commodore users' group known as ABCUG (Another Baltimore Commodore Users Group). We are recognized by Commodore as an official users' group since we do not pirate software or allow pirated software in our club library.

At one of our executive meetings it was queried as to whether any programs from past issues of *Commodore Magazine* have been released into the public domain. Thank you for any consideration you make in this matter.

Sincerely,
David Bowman
ABCUG
Baltimore, MD

Editorial Response: All rights to the programs printed in Commodore Magazine are reserved by Commodore Magazine. You may freely distribute the programs printed here only to club members who own that particular issue of the magazine.

To the Editor:

According to Shay Addams' "Adventure Road" column in the March 1987 issue and a review by Bob Guerra in the May issue of *Commodore Magazine*, the game *Amnesia* by Electronic Arts is available on disk for the Commodore 64. Unfortunately, every software store in my area has no information about this product and even the mail-order companies that list this game in their advertisements seem to encounter a sudden bout of amnesia when I mention the game. I was wondering if you could perhaps assist me in finding out if this game has actually been released for the Commodore 64/128, and if so, where I could obtain it.

Sincerely yours,
Christy Turtzo
Nazareth, PA

Editorial Response: Did we forget to mention that Amnesia was to be released in August? Electronic Arts reminds us that Amnesia is now in stock at your local dealer for $39.95.

To the Editor:

I have just discovered your magazine. I think it's fantastic that we Commodore-owners have our own magazine.

I have a problem with communications. It's costing me hundreds of dollars a week to verbally "download" information, instructions and graphic descriptions to my wife. I am in the U.S. Army currently stationed in West Germany. I have read a variety of articles on telecommunications, but as yet haven't found any information about possible inexpensive telelinks from where I am to Virginia (or anywhere else). I love my SX-64, I love my wife, too. I'd like to get them both to work together for my benefit! Can you help?

SP4 Walter Butts
West Germany

Editorial Response: You can send electronic mail to your wife in Virginia 24 hours/day, 7 days/week by contacting: CompuServe Information Services in West Germany at 6151-83-4641 and ask to speak with Mr. Jagusch, or contact the local MCI Mail office in West Germany.

Commodore MAGAZINE

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other MINDSCAPE products!

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C-64 BUSINESS AND PRODUCTIVITY

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AMIGA 500 VIDEO TEST FLIGHT PROGRAM TAKES OFF

Commodore has announced that the Amiga 500 Video Test Flight program will begin on September 30, 1987. This innovative program is intended to assist perspective Amiga 500 purchasers by providing them with a VHS video tape demonstrating the power and versatility of the Amiga 500. The tape is available free of charge at any Amiga 500 dealer. Stop by an Amiga 500 dealer to get your free copy of this informative tape today!

PROJECT: STEALTH FIGHTER AND AIRBORNE RANGER

MicroProse Software has introduced **Project:Stealth Fighter,** a jet fighter simulation, and **Airborne Ranger,** an arcade/simulation. **Project:Stealth Fighter** is a simulation of a radar-elusive jet fighter, featuring 3D out-the-window viewing and an advanced cockpit with more than 30 controls. The scenarios are based on Air Force reconnaisance missions. **Airborne Ranger** parachutes you on solo missions behind enemy lines, where you embark on infiltration and commando combat missions. Joystick control moves your soldier in eight directions over full-scrolling 3D terrain.

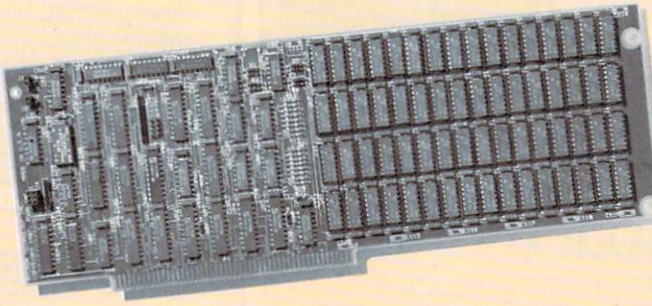
The games are available for the 64 and 128. For more information contact MicroProse, 180 Lakefront Drive, Hunt Valley, MD 21030. Or call: (301)-771-1151.



AMIGA 500 SETS SALES RECORDS

Commodore sold out the initial production run on the Amiga 500 within the first two weeks of product shipment and continues to take reorders in large markets such as Boston and Los Angeles. The Amiga 500's initial sales are the most impressive since the successful launch of the Commodore 64, according to Richard McIntyre, Senior Vice President, Sales and Marketing. "We are delighted with how well the Amiga 500 is selling through, especially during the weeks before launching our national advertising campaign," said McIntyre. The Amiga 500 is currently available at a suggested retail price of $699.

2 MEGABYTE BOARD FOR AMIGA



Micron Technology has announced a 2 megabyte board for the Amiga 500, 1000 and 2000 series. The memory board is inserted into an expansion slot on the motherboard of the Amiga 2000, while an expansion chassis must be purchased along with the memory board for the 500 and 1000.

The 2 megabyte board lists for $495 plus $55 for the expansion chassis with interface card. For more information contact: Micron Technology, Inc., Systems Group, 2805 East Columbia Rd., Boise, ID 83706. Or call: 1-800-642-7661.

PRODUCTIVITY PERIPHERALS FOR AMIGA 500

C Ltd. has announced two new products for the Amiga 500. (1) **C Ltd Controller 500** allows all "Small Computer Systems Interface" (SCSI) products to communicate with the Amiga 500. This includes almost all SCSI hard drives as well as future SCSI devices like CD-ROMs and WORM Optical devices. **C Ltd Controller** retails for $199.95.

(2) **Internal RAM Memory Expansion,** a 512K RAM memory card, features a built-in clock/calendar, a 4-layer board and socketed RAM chips for easy serviceability. The card is available for $199.95.

For more information contact C Ltd. 723 East Skinner, Wichita, KS 67211. Or call Greg Brumley: (316) 267-3807.

FIVE SOFTWARE TITLES RELEASED UNDER ELECTRONIC ARTS

Electronic Arts has announced the release of five new titles from three of its Affiliated Labels: DataSoft, Game Designers' Workshop and Strategic Studies Group. **Video Title Shop** and accompanying data disk **Video Title Shop Graphics Companion** from DataSoft bring video production to the Commodore 64. With a VCR, video camera and Commodore 64 or 128, any home video production can be enhanced, or specialized color video productions may be created. DataSoft's **Alternate Reality: The Dungeon** is the second in the Alternate Reality fantasy role playing series for the 64 and 128, including four levels

Continued on pg. 10

Continued from pg. 8

of dungeons filled with challenges and monsters. In **Road to Moscow** (64) from Game Designers' Workshop, players relive the War in Russia between 1941 and 1945. Take and hold strategic cities before the computer or your opponent accumulates reinforcements, and you win. **Battles in Normandy, June-July 1944** from Strategic Studies Group, is the sequel to **Battlefront.** This game for the 64 and 128 is based on D-Day and the fighting around the beachhead that followed. Players can relive scenarios as set up in the game or design their own new ones.

For more information contact Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. Or call: (415)-571-7171.

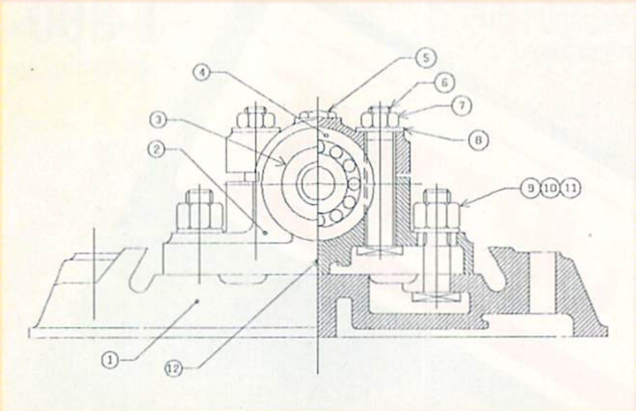
SESAME STREET GOES HI TECH

Hi Tech Expressions has acquired the publishing rights for a line of Sesame Street software developed by Children's Television Workshop. The first six preschool titles will be marketed under the Sesame Street trademark and will be priced at $9.95 each. All titles are available for the Commodore 64: **Astro-Grover** — a numbers game; **Ernie's Magic Shapes** — a shape and color matching game; **Big Bird's Special Delivery** — an object recognition and classification game; **Pals Around Town** — an animated, get to know the neighborhood activity; **Ernie's Big Splash** — an animated maze builder; **Grover's Animal Adventures** — an animated visit to different animal environments. For more information contact Hi Tech Expressions at 1700 N.W. 65th Ave., Suite 9, Plantation, FL 33313. Or call: (800)-848-9273.

THE GUILD OF THIEVES

Firebird has released **The Guild of Thieves,** the sequel to **The Pawn. The Guild of Thieves** is an illustrated adventure which takes place in the mythical kingdom of Kerovnia. Magnetic Scrolls, the programming team for both adventures, has combined dialogue, graphics, humor and puzzles. A 40-page novella is included with the program disk, plus a Bank of Kerovnia credit card, an Indenture and Contract of Service Certificate, dice, play guide, and more.

Suggested retail price is $39.95 for the Commodore 64. For more information contact Firebird, PO Box 49, Ramsey, NJ 07446. Or call Tom Benford, (201)-920-7527.



HOME DESIGNER

Briwall has introduced **Home Designer,** a CAD package that allows you to create detailed drawings and to print out your drawings on a dot-matrix printer. **Home Designer** does not rely on bit-map programming; instead it stores and displays your drawing using a complex set of algorithms. The program includes accurate scaling, five different drawing layers and support of library figures. **Home Designer** can be used for house plans, scaling, mechanical drawings, engineering, schematics, quilt patterns, etc.

Home Designer sells for $49.95. For more information contact Briwall, PO Box 129, Kutztown, PA 19530.

EXPRESS PAINT!

PAR Software has introduced **Express Paint!**, a combination desktop publishing and paint program for the Amiga. In addition to the paint program, the package is capable of typesetting text files created by Notepad or other editors. Its Overlay mode saves valuable memory. Features include multiple brushes, distortion effects, flexible printer interface, scrollable canvas, formatted text in any shape, desktop publishing in color, zoom lens and more.

Express Paint! now sells for $79.95. For more information contact PAR Software, Inc. PO Box 1089, Vancouver, WA 98666. Or call: (206)-694-1539.

GEOS MOUSE SUBSTITUTE



Suncom has begun shipping **IconTroller,** a keyboard-mounted joystick for the Commodore 64 and 128. Designed specifically for the GEOS system, **IconTroller** mounts directly on the keyboard surface. "So many of our customers have told us that GEOS calls for a better input method than mice or a full-sized joystick provide. We designed **IconTroller** for them," said Tom Quinn, Suncom president.

Suggested retail price including a two-year warranty on the **IconTroller** is $19.99. For more information contact Suncom, 260 Holbrook Drive, Wheeling, IL 60090. Or call: (312)-459-8000.

KNIGHT ORC

Firebird has released **Knight Orc,** a three part illustrated adventure game for the Commodore 64, 128 and Amiga. The game scenario casts you as an oppressed orc in a magical world filled with illusion. Graphics illuminate the fast-paced adventure which features full character interaction and cross-communication. High-level commands are accepted and understood thanks to an advanced language interpreter and 1000 word vocabulary.

Knight Orc is available at a suggested retail price of $39.95. For more information contact Firebird, PO Box 49, Ramsey, NJ 07446. Or call: (201)-920-7527.

Continued on pg. 12

NBA FRANCHISES AVAILABLE: RATES REASONABLE!

(REQUIREMENTS: Knowledge of professional basketball. Capable of dealing with giants. Ability to handle high-pressure situations. Must bring own temper.)

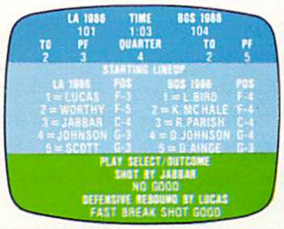
Can YOU do the job?

Find out if you have what it takes in **NBA,** the animated stat-based basketball game. Take control of Larry Bird, Dominique Wilkins, Michael Jordon, Kareem Abdul-Jabbar and Bob Cousey. Pick the starting line-ups, send in substitutes and call for the fast break and full-court press. **NBA** takes into account everything that occurs on court. On offense, you call the play. Choose the sequence of passes, but be careful: it increases the chance of two points, but also can lead to a steal or blocked shot. Work the outside, or just go for the three-pointer. On defense, set up outside or close to the basket, go for the rebound, or turn on the pressure and try for a steal. A good NBA coach has to work the bench as well as the floor. Each player's stamina is rated by the number of minutes he can play. Use up your starter too early in the game, and you'll have to send in a sub during those final crucial minutes, and that could turn an overwhelming victory into a closely-contested defeat.

From the designers of Super Sunday, NBA is the first and only fully-animated statistically-accurate basketball game on the market, coming in like a fast break with the following features:

- **A STAT-KEEPER PROGRAM** that allows you to keep track of how well your team is doing. This valuable accessory lets you save stats from the **NBA** game for later review. Individual players' performances and statistics are updated throughout the game. You can view them during and after the game on your screen or printer.
- **20 GREAT TEAMS** from the 1959-60 Boston Celtics to the four top teams from the 1985-86 season: Boston, Milwaukee, Houston and Los Angeles! In between are some of the greatest teams that ever played the game: the 1966-67 Philadelphia 76ers with Wilt Chamberlain and the classic match-up from the 1969-70 season between the Lakers and the New York Knicks!
- **YOUR BRILLIANT PLAY** re-enacted by all 10 players on screen.
- **THREE MODES OF PLAY:** head-to-head, solitaire and autoplay. The autoplay function also allows you to play the same teams several games in a row . . . a needed option to replay a season.





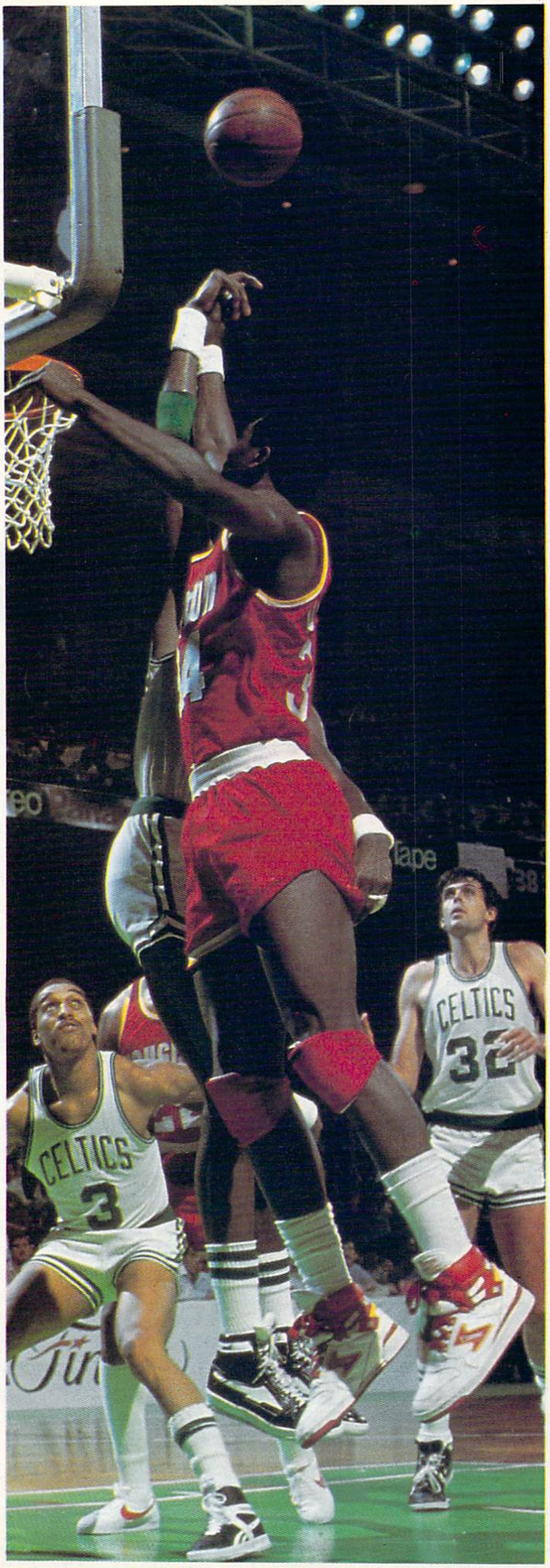
NBA can be played on the Apple® II family, Commodore® 64/128 or IBM® PC computers.
Price: $39.95.
Watch for the release of Accessory disks; **1987 Season** and **GM Disk.**

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Continued from pg. 10

CODEQUEST '87 PROGRAMMING CONTEST

Magazines on Disk, publishers of **Softdisk, Loadstar** and **Big Blue Disk** hardware-specific disk monthlies, announced its annual programming contest for Apple II, Commodore 64/128 and IBM PC/compatibles. Cash prizes totaling more than $5,000 will be awarded to first, second and third place winners in each division. Original entries are due by January 31, 1988. Program categories include games, graphics, music, educational, home and business applications and utilities. All winning entries will be published in one or more of the disk monthlies. Programs submitted elsewhere are ineligible. In addition to cash prizes, program authors will receive contract fees for nonexclusive rights to publish their programs. Winners will be announced March 1.

For **CodeQuest '87** contest rules and entry forms, write to Magazines On Disk, PO Box 30008, Shreveport, LA 71130-0008. Or call: (318)-221-8718.

TEST DRIVE

Accolade has released **Test Drive,** a driving simulation for the Commodore Amiga, 64 and 128. You can test drive a Ferrari Testarosa, Lamborghini Coun tach, Lotus Esprit Turbo and several other sports cars. The object of **Test Drive** is to drive different sections of highway within a certain time limit.

Test Drive retails at $44.95 for the Amiga and $29.95 for the 64 and 128. For more information contact Accolade, 20813 Stevens Creek Boulevard, Cupertino, CA 95014. Or call: (408)-446-5757.

PROTOTERM 128 TELECOMMUNICATIONS PACKAGE

Briwall has announced the release of **PROTOTERM 128,** a telecommunications package for the Commodore 128. **PROTOTERM 128** features 48K Text buffer with split screen, scrollable window; supports RAM expander as an extra separately controllable text buffer; multi-number autodialing, Terminal Setup program; supports 300/1200 baud rates with 1650, 1660, 1670 or compatible modems; supports XMODEM, Punter, Punter multi-file and WXMODEM transfer protocols.

PROTOTERM 128 is available for $12.95 from Briwall, PO Box 129, Kutztown, PA 19530.

BANK STREET SCHOOL FILER DATABASES

Sunburst has announced the availability of the **Bank Street School Filer** for the Commodore 64 and 128. In addition, six new databases have been added to **Bank Street School Filer: Animal Life, Astronomy, Endangered Species, North America, Space** and **United States.** The data bases offer teachers quick access to documented information on each subject. Each data disk can be updated and teacher's guides provide classroom lessons, suggestions and activity sheets. Each database contains a glossary on new vocabulary and a bibliography of related readings.

Each package sells for $59. For more information contact Sunburst Communications Inc., 39 Washington Ave., Pleansantville, NY 10570. Or call: (914)-769-5030.

YAK'S PROGRESS

Eurosoft International Inc. announced the introduction of **Yak's Progress,** a compilation of eight games from Britain's #1 Games Programmer, Jeff Minter. **Yak's Progress** allows Commodore 64 and 128 users to experience some of the most unusual arcade-style games devised across the Atlantic. **Yak's Progress** includes such titles as **Revenge of the Mutant Camels, Laser Zone, Sheep in Space** and **Metagalactic Llamas.** Most of the games revolve around the attempted domination of Earth by the forces of Zzyax and Irata, with an array of the most devious weapons known to mankind. Smooth-scrolling graphics editors, multi-level attack modes and advanced music scores accompany all the adventures.

Yak's Progress is available for the Commodore 64 and 128 for $19.95. For more information contact Eurosoft International, 114 East Ave., Norwalk, CT 06851. Or call: (203)-838-9890.

TYPING TUTOR

Simon & Schuster has introduced **Typing Tutor IV** for the Commodore 64 and 128 in 64 mode. **Typing Tutor IV** determines your initial typing ability, then works with you to set progress goals, determining the speed you wish to achieve and the weekly practice time you can manage. **Typing Tutor IV's** Natural Language Generator simulates real life typing experiences using words that contain the keys you're learning. Also included is Letter Invaders, an arcade style drill game.

Typing Tutor IV retails for $39.95. For more information contact Simon and Schuster Software, 1 Gulf + Western Plaza, New York, NY 10023. Or call: (212)-373-8882.

BRODERBUND VALUE PRICED SOFTWARE

Broderbund Software has announced a new line of "Value Priced Software." The line includes such titles as **Lode Runner,** the award winning adventure **Karateka** and productivity titles from the **Bank Street** line. The software is available on the Commodore 64 and 128 and will carry suggested retail prices of $14.95 to $29.95, to be sold through mass merchandisers and software specialty stores. The products will be sold in their original "front-line" packaging.

For more information contact Broderbund Software Inc., 17 Paul Drive, San Rafael, CA 94903-2101. Or call: (415) 492-3200.

Compiled by James Esch

The Mission is Vital. The Odds are Against You.



You're one of the elite . . . parachuting alone behind enemy lines. The enemy controls the terrain, hidden in bunkers and machine gun nests . . . you may be surrounded. You might complete the mission if you crawl through the ravine and approach from the rear . . . or maybe a frontal attack will take them by surprise.

MicroProse has broken new ground with **AIRBORNE RANGER**, the quality action game where tactical thinking and lightning reflexes determine your fate. Your missions will vary as much as the climate and terrain. Slip silently into position to rescue prisoners trapped in "tiger pits" from a P.O.W. camp, or throw caution to the wind and try to destroy a key munitions dump in the desert. But watch out . . . enemy troops can attack from any direction.

The action is fierce as you control one soldier's battle against overwhelming odds. You'll need skill and strategy to outmaneuver your enemy, plus courage and some luck to make your escape. Along the way, search out that hidden cache of weapons and first aid supplies . . . you'll probably need them.

AIRBORNE RANGER

AIRBORNE RANGER is a fast-paced, quick-to-learn game with 12 desperate missions in three different regions of the world. You'll be running, walking and crawling across full-scrolling, 3-D terrain. Arm yourself with an M-16 assault rifle, bayonet, LAW rocket (Light Antitank Weapon) or time bomb, but be wary of enemy submachine guns, antitank rockets, robot minitanks, minefields and flamethrowers.

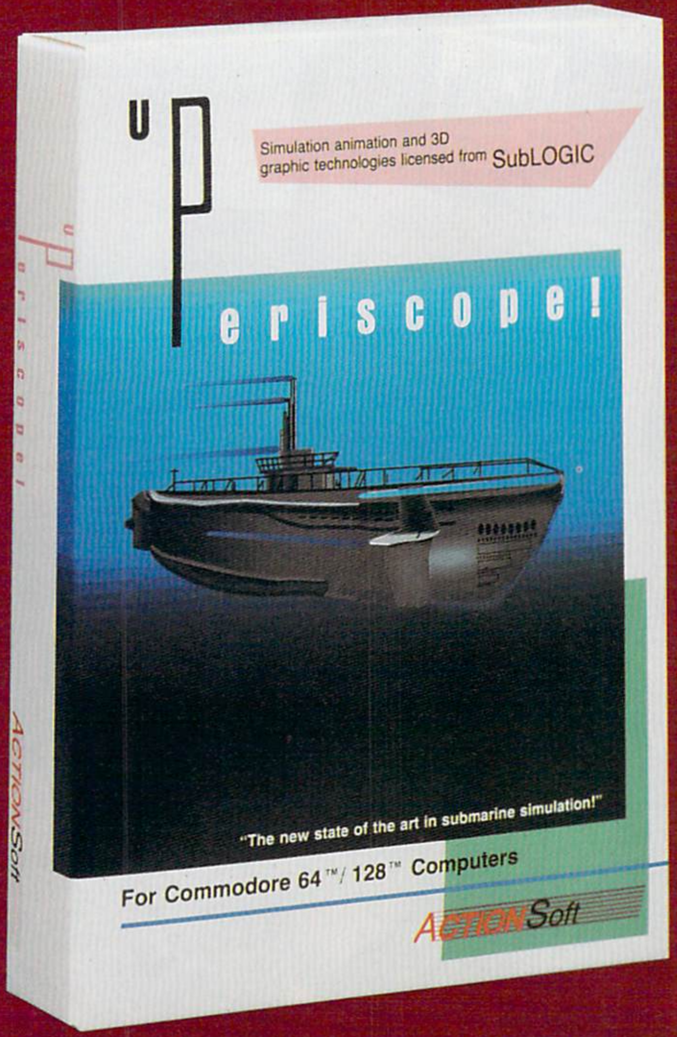
AIRBORNE RANGER . . . More than just a great game. It's an adventure.

AIRBORNE RANGER is available from a "Valued MicroProse Retailer" (VMR) near you. Call us for locations! For Commodore 64/128, IBM-PC/compatibles and Apple II+/e/c. Call or write for specific machine availability, and for MC/VISA orders if product not found locally.



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Up Periscope!, the new state of the art in submarine simulation! Blowing the competition out of the water with superior combat strategy and tactics courtesy of Captain John Patten, USN (Ret.). With true animated 3D graphics courtesy of SubLOGIC. Up Periscope!, generations ahead of the pack!

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Fire 1	Suggested Retail Price	$29.95	$34.95
Fire 2	3-Dimensional Graphics	Yes	No
Fire 3	Number of Scenarios	6	3
Fire 4	Split-Screen Views	Yes	No
Fire 5	Reality Levels	11	7
Fire 6	Radar Screen	Yes	No
Fire 7	Accu-Sound™ realism	Yes	No
Fire 8	Torpedo Types	3	1
Fire 9	Auto or Manual Torpedo Launch	Yes	Yes
Fire 10	Time-Day-Month-Year Selection Capability	Yes	No
Fire 11	Zoom Feature	Map or Ship Views	Map View Only
Fire 12	Submarine Strategy & Tactics Manual by John Patten, Capt. USN (Ret.)	Yes	No
Fire 13	Auto-Load Feature on C128	Yes	No
Fire 14	Joystick Required	No	Yes

...ON RIGHT OUT OF THE WATER!







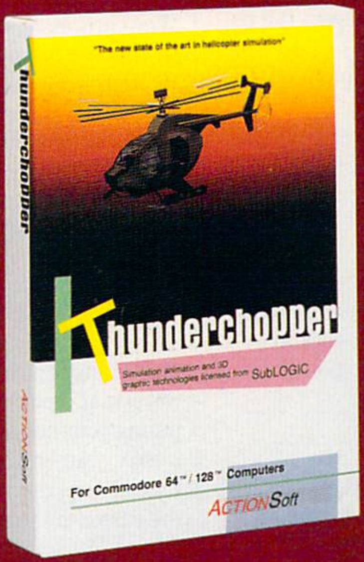






ThunderChopper

And don't forget ThunderChopper! For true helicopter action and realism, nothing else even comes close. ThunderChopper incorporates the most advanced graphics, flight systems, and game-playing factors to provide a sensational balance of strategy and fun.



See Your Dealer...
Or write or call for more information. Up Periscope! and ThunderChopper are available on disk for the Commodore 64/128, Apple II, and IBM PC line of personal computers for the suggested retail price of $29.95. For direct orders please specify which computer version you want. Include $2.00 for shipping (outside U.S. $6.25) and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club charges accepted.

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LOU SANDER'S TIPS & TRICKS

Compiled by Louis F. Sander

Each month this column brings you a super collection of 64 and 128 tips and tricks from all around the world. (This month's Indonesian contribution marks our 45th country published). In selecting the items to print, we keep in mind the needs of people at all levels of computing, from beginner to machine language programmer. We try to have something for everyone, and if our mail is any indication, we are succeeding very well. We always welcome your comments.

If you have a tip or short program to share with other readers, write it up and send it in. (One trick per sheet of paper, please). We pay $10 or more per item. Send your ideas to:

Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237

Enclose a self-addressed stamped envelope, and we'll send you a Trick Writer's Guide.

Q-Link subscribers can submit items by E-Mail to LFS.

Bard's Tale II, Tip I. This lets you make copies of anything your characters possess, including, and especially, gold pieces. First, get your party into the Adventurer's Guild. Give any character the item you want to copy. If you're copying gold, then pool all the gold to this character. Remove this character from the party, then add him/her right back in again.

Now give the item to a different character, and repeat the removing and adding process.

Do this with all six characters, then turn the computer off. DO NOT choose "Leave Game" before doing so.

From now on, when you load the game and add your party, each of your six characters will have the amount of gold you started with.

Keith Cottrell
Grafton, Ohio

Bard's Tale II, Tip II. If you have an item that has a limited number of uses and you've almost used it up, sell it back at Garth's. If you repurchase it, it will have a full allocation of uses.

Larry Hardy
APO, New York

Bard's Tale II, Tip III. Don't you wish that the "Cat Eyes" spell would point out secret doors? Don't you wish that the "Greater Revelation" spell was indefinite? Then mix the spells!

To get an indefinite lamp that points out secret doors, cast a "Greater Revelation" spell, then cast a "Cat Eyes" spell on top of it. The secret doors should remain visible, and your torch will not go out.

Steve Harney
El Paso, Texas

Easy Script and the MPS-1000: The manual for Easy Script does not give instructions for underlining on Commodore's MPS-1000 printer. The sequential file 1515 UNDERLINE shows how to do it on the 1515 printer, and fortunately the same commands work perfectly with the MPS-1000.

Clair Black
Nabire, Indonesia

Unslashing your zeroes: These days, many printers are capable of Near-Letter-Quality or better in their output, and it's common to use them for printing important documents. But sometimes, even though the print looks marvelous, the zeroes have that tell-tale slash through them. This touch of nerdhood is a no-no in many contexts, especially in a resume.

The way out? Use your global search-and-replace feature to change every zero to a capital "O." Goodbye, slashes.

Stephen Knapick
New Rochelle, New York

Word processor video proofreading: It's hard to do a good proofreading job on my 40-column word processing screen, because the words are wrapped around the right-hand margin.

So when I'm ready to proofread my document, I temporarily set the margins to 1 and 39, then print it out to my video screen. The software eliminates the word splits, making it much easier to spot errors and places for improvement. When I'm ready to print on paper, it's easy to reset the margins to something more suitable for an 80-column output.

Karen E. Crum
Waverly, Kansas

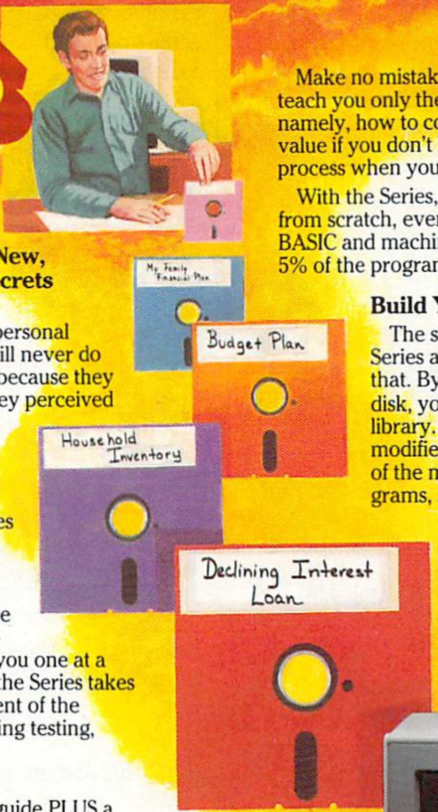
Correcting input: This routine illustrates a useful technique for correcting input errors without unnecessary retyping. After inputing your data, the routine asks you if everything is correct. If it isn't, your cursor jumps to the first line of your original input. If necessary, retype the entry or simply press RETURN to move the cursor to the next entry.

Joseph R. Charnetski
Dallas, Pennsylvania

Continued on pg. 110

Make Any Computer Do Exactly What You Want With McGraw-Hill's

Contemporary Programming & Software Design Series



From Writing Your Own Programs to Modifying Existing Software, Here's the New, Easy, and Low Cost Way to Unlock the Secrets of Your Computer

Whether you use computers for business, for personal applications, or for fun, off-the-shelf programs will never do everything you want them to do for you. That's because they were written by programmers to satisfy what they perceived as the needs of the greatest number of potential users—often missing some or many of your specific needs.

That's why McGraw-Hill's new Contemporary Programming and Software Design Series teaches you how to create your own software . . . either from scratch or by making key modifications to existing programs.

There is nothing magical about it. You learn the process of building a computer program step-by-step with McGraw-Hill *Concept Modules* sent to you one at a time, once a month. Each of the ten modules in the Series takes you through an important step in the development of the structure and detailed logic of a program, including testing, debugging, and documentation.

Unique Interactive Hands-On Instruction

Each module includes an easy-to-understand guide PLUS a 5¼″ floppy disk containing typical programs and interactive instruction that you can run on Commodore 64 and 128 computers, IBM PCs and PC compatibles for hands-on experience.

In the first Module, for example, when your sample program (Declining Interest Loans) appears on your screen, you'll find errors on certain program lines. You'll also see that the program is only three-quarters completed.



Now comes the fun part. You'll discover how this program is built, and in the process you'll learn how to identify and correct errors. And by the end of Module 1, you'll actually have completed this program yourself.

But there's more. Special graphics on your screen work in conjunction with the accompanying guide to amplify, illustrate, and deepen your understanding of software design principles.

The Crucial 95%—Learn the Foundation of Computer Programming

While the Series includes interactive disks that run on specific computers, everything you learn you can apply to any language or machine. Why is this possible? Because McGraw-Hill knows programming is far more than coding a program into the computer using a specific language. In the real world of computers, 95% of the programming process is carried out using design techniques that are independent of specific language or machine. It is this crucial 95% that you thoroughly understand and master in the Series.

Make no mistake. Almost all books and courses on "programming" teach you only the final 5% of the total programming process—namely, how to code in a specific language . . . information of little value if you don't know how to reach the point in the programming process when you are ready to code.

With the Series, however, you'll learn to create your own programs from scratch, even modify off-the-shelf programs. You'll learn enough BASIC and machine language to get you started on the remaining 5% of the programming process.

Build Your Own Personal Software Library

The sample programs you work with throughout the Series are excellent learning tools. But they're more than that. By combining the sample programs onto one master disk, you'll have the start of your own personal software library. In addition to the programs you've written and modified throughout the Series, you'll also receive dozens of the most popular public domain and user-supported programs, such as data base manager, word processor, calendar generator, appointments reminder and much, much more.

15-Day No-Risk Trial

To order your first module without risk, send the card today. Examine the first module for 15 days and see how the Series will help you make your computer do exactly what you want it to do!



If someone has beaten you to the card, write to us for ordering information about the Contemporary Programming and Software Design Series.

McGraw-Hill Continuing Education Center
3939 Wisconsin Avenue
Washington, DC 20016

AMIGA Tips & Tricks

Compiled by Tim Jones

Welcome to *Amiga Tips and Tricks*. Each month we will offer a series of tidbits, teasers and short programming examples concerning using and programming the Amiga. In this installment, we look at the WorkBench and its associated functions.

If you have an item that you would like to submit for use, you can send it to:

Commodore Amiga Tips
651 Outrigger Dr.
Deltona, FL 32738

Items should be to the point, but describe your point completely. We welcome game tips and program usage tips as well as the type of items in this installment. If we use your hint, tip or program example, we will pay between $10 and $50.

Using Keyboard Shortcuts

The following is a list of keyboard equivalents to Mouse functions.

Keyboard	Mouse
Left-Alt-Amiga	Left Mouse button
Right-Alt-Amiga	Right Mouse button
* Amiga-Left Arrow	Move pointer left
* Amiga-Right Arrow	Move pointer right
* Amiga-Up Arrow	Move pointer up
* Amiga-Down Arrow	Move pointer down

* = Gradual effect (slow to fast movement)

These are other keyboard shortcuts that work with most applications.

Keyboard	Description
Left-Amiga-N	Top Priority Task to Back
Left-Amiga-M	Top Priority Task to Front
CTRL-D	Abort Batch execution (i.e. startup)
CTRL-C	Abort operation (i.e. list, dir, etc.)

Bob Stevens
Winter Park, FL

[Thanks to Bob for these. I know most of these are in books somewhere, but he has compiled them nicely. I will be on the look out for others. - taj]

The Faery Tale Adventure Update: For those of you enjoying *The Faery Tale Adventure* from MicroIllusions, I have been told by their public relations department that a new version of the program is available that fixes a few minor bugs and allows you to continue playing after you save a game. To determine if you need the update, try to enter the building due north of the tavern in Tambrey. If you cannot enter it, you need the update. If you can, you should then check the save function. If you are dumped back into the CLI after you perform a save, you also need the update. To get the update, you should send your original disk (include your registration card if you haven't sent it yet) to:

MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
Attn: Faery Tale Update

Jim Steinert, MicroIllusions
Granada Hills, CA

[I did this and got my new version in five days! - taj]

AmigaBASIC Memory Problems: If you use AmigaBASIC a lot and find that you are running out of Heap space quite often, there are a couple of things that you should look for to help prevent this. First, if you are opening custom windows and screens in a program, be sure that you close ALL of them before exiting back to the interpreter. Second, if you are creating string arrays containing sprite or bob data, even though AmigaBASIC is supposed to free them when you exit, use the FORGET command to clear them prior to exiting. Also, when you activate AmigaBASIC, be sure that the stack (set using the STACK command if you're using CLI) is as small as possible (if you are entering from WorkBench, check this via the INFO menu option). I use a stack of 4000. The reason for this is that AmigaBASIC allocates a separate stack specifically for your program that takes away from the available memory for the heap.

Also, just for information, the HEAP is where AmigaBASIC gets the memory required to open screens and windows as well as store the entry tables for any libraries you may be using in

Continued on pg. 122

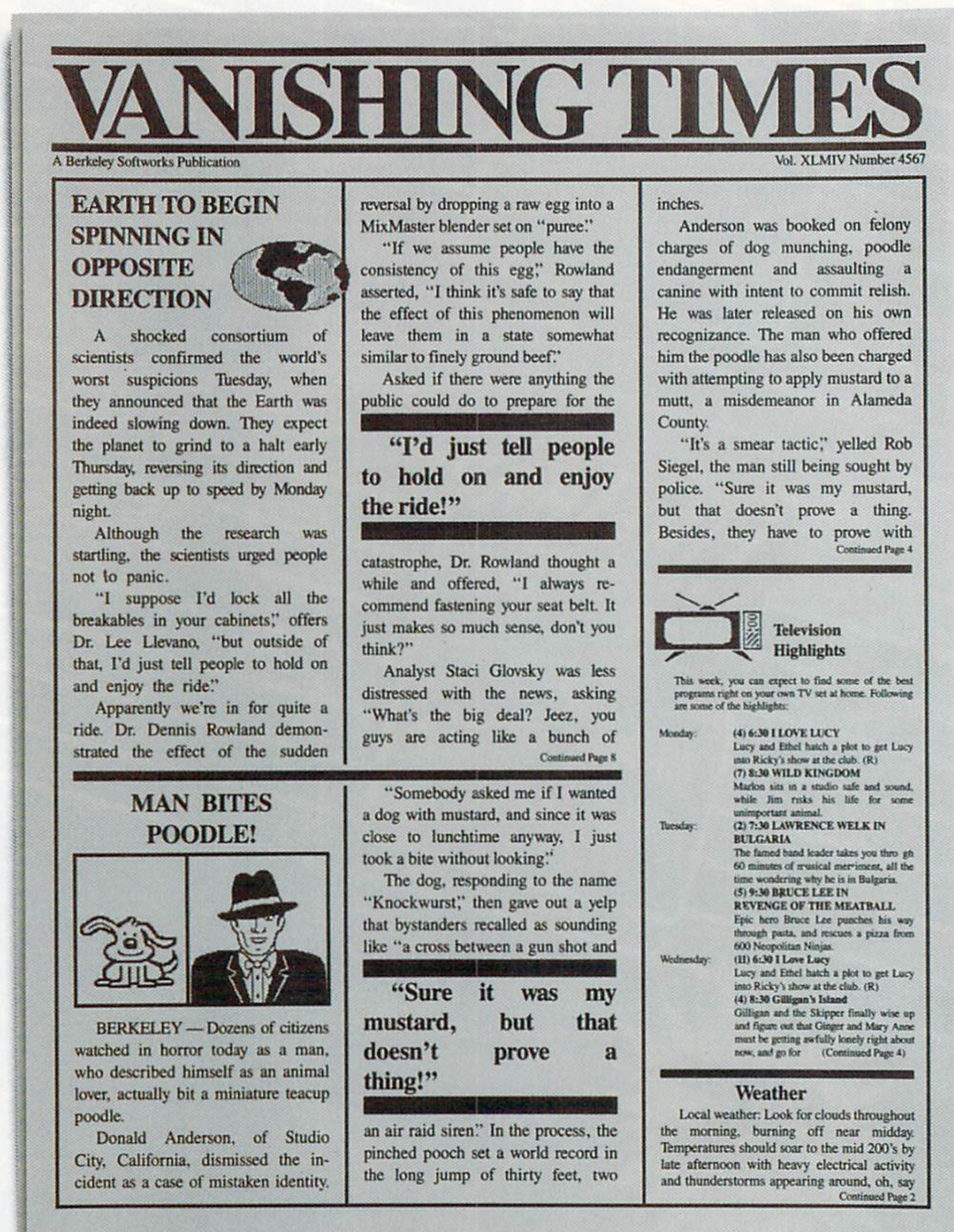

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LAST MISSION Battle the alien armada with the most awesome array of firepower ever displayed on a spaceship.
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Q*BERT Q*bert, the irresistible arcade character, dodges crafty creatures as he jumps up and down the pyramid.
TNK III TNK III is a one-tank army. You provide the strategy to overpower the enemy tanks, bombers, and combat troops that surround you.
SHACKLED Rescue your allies who are shackled behind dungeon doors. When freed, they fight along your side.
DATA EAST USA, INC. 470 Needles Drive, San Jose, CA 95112. (408) 286-7074.
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WE JUS
FRONT PA





Text can be printed in every font available through GEOS. These documents were printed on an Apple Laser Writer



VANISHING TIMES

A Berkeley Softworks Publication

Vol. XLMIV Number 4567

EARTH TO BEGIN SPINNING IN OPPOSITE DIRECTION

A shocked consortium of scientists confirmed the world's worst suspicions Tuesday, when they announced that the Earth was indeed slowing down. They expect the planet to grind to a halt early Thursday, reversing its direction and getting back up to speed by Monday night.

Although the research was startling, the scientists urged people not to panic.

"I suppose I'd lock all the breakables in your cabinets," offers Dr. Lee Llevano, "but outside of that, I'd just tell people to hold on and enjoy the ride."

Apparently we're in for quite a ride. Dr. Dennis Rowland demonstrated the effect of the sudden reversal by dropping a raw egg into a MixMaster blender set on "puree."

"If we assume people have the consistency of this egg," Rowland asserted, "I think it's safe to say that the effect of this phenomenon will leave them in a state somewhat similar to finely ground beef."

Asked if there were anything the public could do to prepare for the

"I'd just tell people to hold on and enjoy the ride!"

catastrophe, Dr. Rowland thought a while and offered, "I always recommend fastening your seat belt. It just makes so much sense, don't you think?"

Analyst Staci Glovsky was less distressed with the news, asking "What's the big deal? Jeez, you guys are acting like a bunch of

Continued Page 8

MAN BITES POODLE!

BERKELEY — Dozens of citizens watched in horror today as a man, who described himself as an animal lover, actually bit a miniature teacup poodle.

Donald Anderson, of Studio City, California, dismissed the incident as a case of mistaken identity. "Somebody asked me if I wanted a dog with mustard, and since it was close to lunchtime anyway, I just took a bite without looking."

The dog, responding to the name "Knockwurst," then gave out a yelp that bystanders recalled as sounding like "a cross between a gun shot and

"Sure it was my mustard, but that doesn't prove a thing!"

an air raid siren." In the process, the pinched pooch set a world record in the long jump of thirty feet, two inches.

Anderson was booked on felony charges of dog munching, poodle endangerment and assaulting a canine with intent to commit relish. He was later released on his own recognizance. The man who offered him the poodle has also been charged with attempting to apply mustard to a mutt, a misdemeanor in Alameda County.

"It's a smear tactic," yelled Rob Siegel, the man still being sought by police. "Sure it was my mustard, but that doesn't prove a thing. Besides, they have to prove with

Continued Page 4

Television Highlights

This week, you can expect to find some of the best programs right on your own TV set at home. Following are some of the highlights:

Monday: **(4) 6:30 I LOVE LUCY**
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(7) 8:30 WILD KINGDOM
Marlon sits in a studio safe and sound, while Jim risks his life for some unimportant animal.

Tuesday: **(2) 7:30 LAWRENCE WELK IN BULGARIA**
The famed band leader takes you thro gh 60 minutes of musical mer-iment, all the time wondering why he is in Bulgaria.
(5) 9:30 BRUCE LEE IN REVENGE OF THE MEATBALL
Epic hero Bruce Lee punches his way through pasta, and rescues a pizza from 600 Neopolitan Ninjas.

Wednesday: **(11) 6:30 I Love Lucy**
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(4) 8:30 Gilligan's Island
Gilligan and the Skipper finally wise up and figure out that Ginger and Mary Anne must be getting awfully lonely right about now, and go for (Continued Page 4)

Weather

Local weather: Look for clouds throughout the morning, burning off near midday. Temperatures should soar to the mid 200's by late afternoon with heavy electrical activity and thunderstorms appearing around, oh, say

Continued Page 2

T MADE GE NEWS.

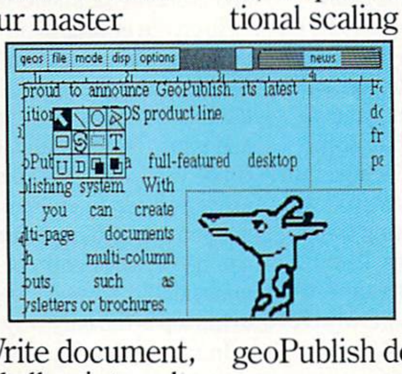
These days, the biggest story in the news is geoPublish. The page-making program for GEOS-equipped 64's and 128's that replaces lifeless layouts with page after page of powerful, punchy professionalism.

Freedom of the press.

Actually, geoPublish is very patriotic software. After all, what other application guarantees your freedom of self-expression? Well, geoPublish sure does. In fact, every piece it prints is dedicated to the preservation of your personality on paper.

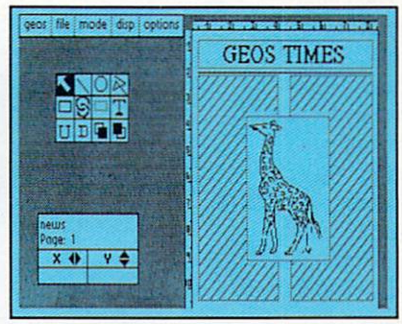
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Reviewed by Scott A. May

The Sentry

Computer: Commodore 64
Publisher: Rainbird/Firebird
77 North Franklin Turnpike
Waldwick, NJ 07463
Medium: Disk
Price: $39.95

With little fanfare, Firebird has imported from Great Britain *The Sentry,* a game that could well be one of the best ever made for the Commodore 64.

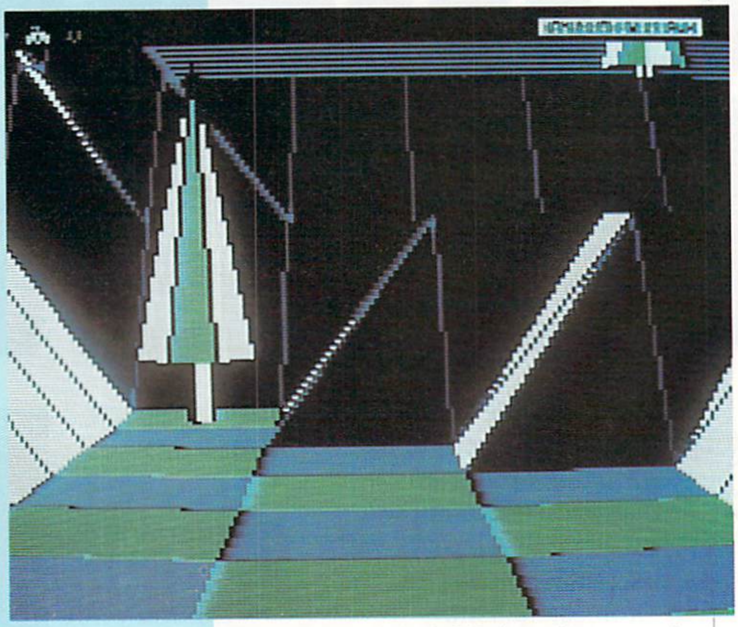
The object of this one-player game is deceptively simple: move your game piece (a robot) from the lowest point of each landscape to the highest, the Sentry's tower. Successfully removing the Sentry from her post earns you the title Ruler of the Landscape. You are then given a secret access code to enter another, more difficult level. The action takes place on a multilevel 3D checkerboard called a "landscape." There are 10,000 landscapes in all, each one more twisted and bizarre than the last, consisting of peaks, valleys and plateaus.

Energy is the governing force in this strange universe. It is used to both materialize (create) and absorb (destroy) matter. To move about the landscape, you must create a replica of your robot at another point on the board and transport yourself into its place. the lifeless matter that stood in your previous position can then be absorbed, recycling it back to your energy reserves.

Creating objects drains energy and absorbing matter increases power. If your robot loses all energy in its reserve, the game is over. Absorb as many trees as you can to build your energy supply. Boulders are another object found in the game, but they can only be created by your robot. Use boulders as tools for your robot to gain altitude. Simply create a boulder, place a robot on top and transport. Boulders may be stacked as high as you like.

Your robot's energy reserve is shown at the top of the screen and should be monitored closely. Creating and absorbing objects causes your power to fluctuate constantly. Each object is assigned a value measured in energy units. The game will not allow you to create an object if your reserve does not contain enough units.

Although the Sentry remains fixed in her position, she is always rotating, scanning the landscape below. If the square you occupy falls under her gaze, a warning buzzer sounds. Within seconds, your robot's energy will be absorbed. You must move quickly to another part of the landscape to avoid destruction.



There are 10,000 landscapes in all, each one more twisted and bizarre than the last, consisting of peaks, valleys and plateaus.

Most levels in the game also contain another threat —Landgazers — minions of the Sentry which behave much in the same manner. Landgazers are difficult to spot and even harder to avoid. Often you will move from the deadly scans of one Landgazer directly into the path of another. There are very few safe positions on the board, forcing you to move continually. To foil a Landgazer locate its position and create a tree between it and your robot. This reduces its power to half-scan, which unfortunately brings a Meanie into play. Once under a Meanie's gaze, you will be forced to hyperspace, deducting three units from your energy reserves. If you have less than three units at the time, the game ends. To beat a Meanie, quickly create and move into another robot nearby. Since you always face the direction you just left, you might be able to spot the Meanie and absorb it. This same tactic will work on Landgazers, but it's very risky.

Player control is carried out entirely through keyboard input. The selected keys are conveniently placed and easy to learn. The first-person perspective is enhanced by your robot's ability to scan its surroundings a full 360-degrees, up and down. U-turns are also possible, when quick changes in direction are called for. Another option allows you to hyperspace to a random location in the landscape. Such movement costs three energy units and is only recommended for emergencies.

To create or absorb an object, you must press the space bar to turn on crosshair sights. Using the same commands to turn the robot, position the sights on a square and issue the command. Gaining high altitude is a Catch-22 experience. From above you can locate more trees to absorb, but you are also in perfect position to be scanned by the Sentry or Landgazers. It is unavoidable, however, because climbing to the top is the only way to win the game.

In my opinion *The Sentry* comes very close to being the perfect computer game. Endless challenges and heart-stopping action are just part of its long-term appeal. Nothing less than a miracle would prevent this from becoming my choice for game of the year.


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Reviewed by Robert J. Sodaro

Accolade's Comics

Computer: Commodore 64
Publisher: Accolade
20813 Stevens Creek Blvd.
Cupertino, CA 95014
Medium: Three double sided disks
Price: $29.95



This unique product combines comic book-style sequential illustrations with the format of classic interactive fiction.

Accolade has taken interactive fiction to its next logical step, an interactive comic book. Steve Keene is the hero in this unique product that combines comic book-style sequential illustrations with the format of classic interactive fiction. Then, for a unique twist, eight different action/arcade games have been cleverly integrated into the gameplay.

At the outset of the game—as with all interactive games—the opening scene is "cast in stone" to a degree, so as to get you on the correct path. Top Scientist, Professor Zoron Farad has been kidnapped by evil and vile forces, and you (Steve Keene, Private Eye extraordinary) have been assigned to the case. In running down all the leads (and especially maneuvering through the videogame segments) Steve has to be very careful, as he comes equipped with only three lives. So if he fails to negotiate the hazards, he'll die, forcing the gamer to begin anew. Still—as per requirement—there is a SAVE feature that will allow you to retain the current game prior to attempting anything too deadly.

As you progress through the comic book portion of the game, certain panels will offer Steve the option of different sets of dialogue. All "permanent" dialogue appears in white word balloons, with the "alterable" dialogue appearing in black balloons. After cursoring through the possible replies (via either the keyboard or joystick) the user will pick one (with RETURN or fire button) which will determine the course of future action. (Be careful here, Steve has a tendency for smart-alek answers. Too many of these in a row could result in the unfortunate loss of life for ol' Steverino.) Sometimes Steve is also offered the choice of two actions, indicated by a flashing arrow. For example, when approaching the Professor's house, do you want to go the front door or climb in the window, etc.

For those gamers who need the practice, or are into Zen gaming (no scores kept here) there is a practice mode so that you can run through the arcade sequences. In the climber game, Steve is clambering around on a series of trapeze bars suspended above shark-infested waters. The goal here is to collect each of five keys to unlock the room and escape. Adding to the suspense of the game, the bars will appear and disappear at random. The swimmer sequence has Steve underwater doing his imitation of a trout going upstream. Steve has to avoid electric eels coming at him, and snapping turtles along the riverbed. He also has to periodically come up for air, avoiding pockets of poisonous gasses.

Other arcade sequences include one where Steve must battle robots laying down radioactive waste, and one where he must climb to the top of a building while avoiding attacking robots hovering by the edges of the building. There is also a jetpack sequence reminiscent of *Defender*, and one where he must negotiate a series of constantly reversing conveyer belts. The final two sets consist of a pair of elevators and a rail car which Steve must drive to the top of a scaffold, and a bomber sequence where he must avoid a ravenous rat, while dodging an array of bombs being tossed by his perennial foe, Arlo 'Red' Spunky (the villain of the game).

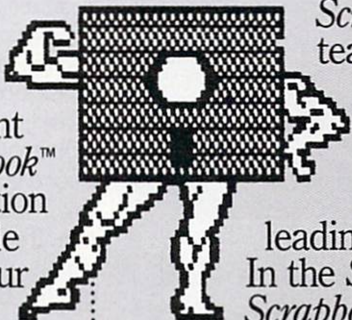
Once the gamer has mastered each of the arcade sequences, he then can go on to the actual thing, and bring Steve through the 'live' portion of the game. At the conclusion of the game—or when Steve's last life is used up—you will get to see how you did as compared with other would-be heroes, as you compare your score to those already on disk. There are three double sided disks, so there will be a fair amount of disk swapping and waiting for sequences to load. Unfortunately, the game makes no provision for dual drives, but loading time is relatively swift, and does not really detract from gameplay at all.

In the final analysis, this game succeeds on both levels: That of interactive fiction and the innovation of being the first video comic book. In fact, the 'video comic book' aspect of this game is so entertaining, this reviewer will go so far as to say that there will soon be a number of products utilizing this format to attract a new audience to interactive fiction.



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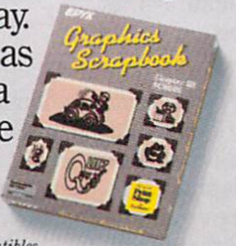
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Reviewed by Mark Cotone

Trailblazer

Computer: Commodore 64
Publisher: Mindscape
3444 Dundee Road
Northbrook, IL 60062
Medium: Disk
Price: $29.95

The elements are familiar, but the mix is quite unique. In Mindscape's new *Trailblazer* offering, outer space, soccer balls and slalom racing are all combined to create an imaginative intergalactic duel that represents arcade entertainment at its high speed best.

Accept this game's challenge and you will be whisked away to an uncharted faraway sector of the final frontier. Star clusters poke their light through the dense black shroud of deep space to illuminate your playfield. Before you at center screen, where one would usually expect to find an unexplored newfound planet or some marauding alien spacecraft, now stands a common everyday soccer ball. Inflated, inanimate and seemingly incongruous, it rests upon a "hyperspatial space grid"; a multi-hued cosmic pathway that will serve as a race course for the matches that are about to begin.

As with most successful arcade contests, the objective of *Trailblazer* is fairly straightforward. This is a speed race. If you can guide your soccer ball down the course and over the finish line in the quickest time, you will be declared the winner. Easy to understand? Yes. Easy to execute? Well....

Your racing vehicle — the soccer ball — is the conventional kick-around type. But instead of using your foot as a power source, a joystick is utilized to control speed and direction. Tap the stick to the left or right, and your ball will follow with a realistic roll. Push the stick forward, and the racer will spin ahead with wild acceleration. Pull back and it will brake to a jarring halt. And to get your ball to do what balls are famous for, you merely depress the fire button, which will spring your rotund racer into the air with a high, arcing bounce. Peppy and responsive, it's easy to get some realistic, down-to-earth ball action even in these far reaches of space. But where the vehicle's control operations may be familiar enough, the terrain to be traversed can only be described as out of this world.



Your racing vehicle — the soccer ball — is the conventional kick around type.

Where most seasoned race drivers would tell you that it's a good idea to keep your eyes on the road, this advice takes on added significance in a *Trailblazer* match. All of the game's courses are paved with a colorful checkerboard pattern, stretching five squares wide from shoulder to shoulder. Most of the roadway's colors are inconsequential, simply providing a tinted trail for you to freewheel about as you roll toward the finish line. But with some of the path's more pronounced pigmentations there's more than meets the eye, for they represent various racing pitfalls that have been carefully placed to wreak havoc on your driving performance. For example, the velocity of your spherical vehicle can fluctuate greatly depending on the road hues on which your racer rolls. Try to sail across a red square and your ball speed will be instantly cut in half, as if you had just run into a patch of molasses. Even more damaging is the purple box, which will take this unplanned deceleration one step further by locking the brakes and stopping your racer dead in its tracks. On the opposite end of the speed spectrum is the green quadrant, which will give your vehicle a sudden turbo boost, and the white area, which thrusts your ball into an uncontrollable warp drive. Even though an increase in speed might be considered a desirable plus in a timed race of this nature, it will take some sharp reflexes to steer clear of disaster once your soccer ball's pedal hits the metal.

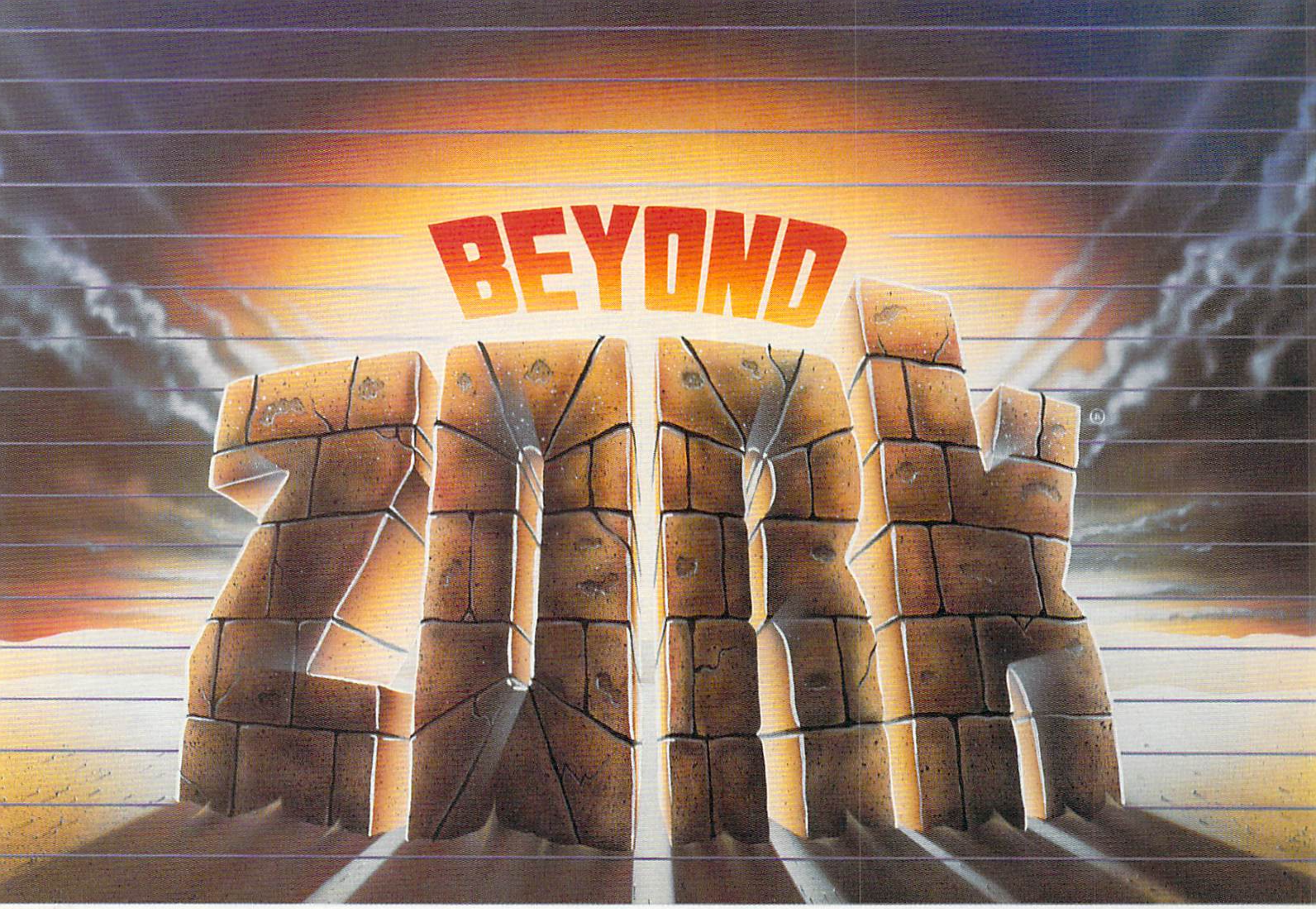
To toy with your sense of direction, Mindscape offers another outrageous pair of squares to keep you on the ball. Running over a blue box gives you a quick kick in the bottom, bouncing you into an involuntary flight whose landing can be helpful or hazardous depending upon the approaching zone. And if you're unlucky enough to skim across a cyan square, your joystick controls will be instantly reversed; an unwanted adjustment which will probably go unnoticed until you try to steer one way and inadvertently roll yourself into a disaster in the opposite direction. It's frustrating fun. You must be equally wary of the danger posed by those quadrants of the course that are void of color altogether. For these are the awe-inspiring space phenomenon known as Black Holes. Appearing as gaps in the checkerboard raceway, these celestial potholes can swallow your ball in one easy gulp, momentarily sucking it into the realm of nonexistence before spitting it back onto the track. These hazards come in all sizes, from a single missing square to a fearfully large gap that runs the entire width of the course. The ultimate in time consuming pit-stops, these Black Holes usually spell the difference between first place and last.

The races themselves, although fantastic in concept and design, will require some of the same solid racing strategies you would employ if you were driving a Formula racer around an Indy track. Knowing how to outmaneuver your opponent, when to make a sprint and how to approach each obstacle are some of the tactical requirements that add cerebral depth to the program's obvious reflex requisites.

To help keep the contest moving without sacrificing a workable racing perspective, the game screen has been sliced in two, providing separate identical representations of the track on each of its upper and lower halves. This allows each player to keep a watchful eye on his ball even if the other racer zooms on ahead or drops back out of sight. The graphics are crisp and clean, with the animation smooth and believable. The checkered soccer ball rolls around realistically, with the hyperspatial color grids blurring past to create the illusion of speed. And all the action is backed by an upbeat audio track that heightens the tension with pulsing music.

Mindscape also offers a myriad of gaming options to keep the challenge fresh. Players can try practice spins on any course, take timed solo runs, go head-to-

Continued on pg. 28



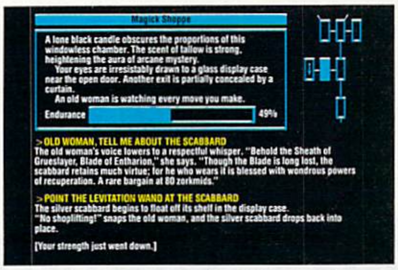
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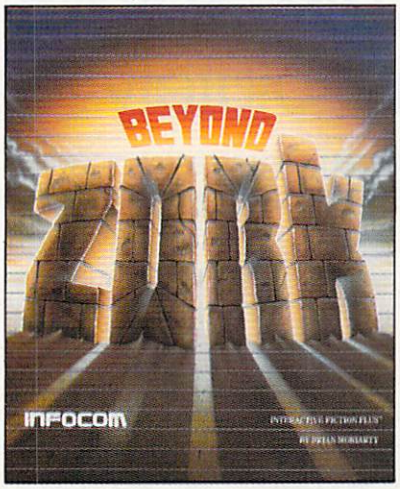
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Screen shown is for the Commodore 128 version.



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Continued from pg. 26

head with a human opponent, or compete with a merciless computer racer. The network of courses waiting to be tested is a highly diversified lot. Mindscape's designers not only use the colored squares as singular pitfalls, but also arrange creative combinations of obstructions to provide a whole series of imaginative obstacle courses. Each track becomes a different puzzle, personalized with its own title, (Easy Going, Jumps Galore, etc.), and then arranged by level of difficulty to provide an ever increasing challenge for the serious joystick jockey. Anyone who can roll his way past the fourteenth level should consider himself an expert space racer.

For arcade enthusiasts looking for a new challenge, I suggest you give *Trailblazer* a workout. You'll have a ball.

Hot on the Trail

Once you're off and rolling, and you're looking to blaze the quickest path to victory, check out the tips I've listed below. They should help to give your ball the winning edge.

- An unusual racing weapon that isn't even touched upon in the program's short instructions is a player's ability to bump his ball against an opponent. The impact itself won't cause any vehicular damage, but the bumping move can be used to either prevent your competitor from passing, or to force him into an involuntary meeting with a course obstacle. But be careful, different ball positions during impact will have different results. If you misjudge your speed and fall back by even the smallest margin, you might wind up increasing your opponent's lead by bumping his rear and thrusting him forward.

- Once you've become familiar with the course layouts and can replace simple reflex reaction with planned, timed moves, the roads will seem a lot smoother and your scores will undoubtedly climb higher. One of the best ways to become acquainted with the various tracks is to play follow-the-leader. Select a two player match option with the computer as your opponent. When the race begins, lag back a little and fall in line behind your competitor's ball. By mirroring the actions of the computerized vehicle, and learning from his mistakes as well as his successes, you will then be able to build a sound strategic foundation for a winning run.

- When Trailblazing, life on the edge is often a prerequisite to victory. When you open the throttle and put some serious speed behind the ball, the course obstacles, which always cover at least one full lane, can have a way of approaching and colliding without warning. Players can buy themselves a little extra time by riding right on the edge that is formed by adjacent lanes. This gives the contestant access to two quick escape routes when trying to sidestep an oncoming obstacle.

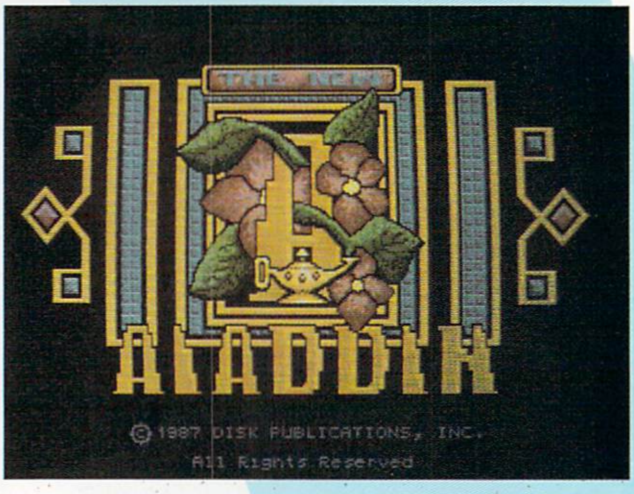
- Ball bouncing takes on some unique properties out here in space, and you'll find that you can still control your vehicle's speed and direction even when it has sailed into the air and lost contact with the trail below. With this in mind, when you are involved in a game option that allows for unlimited use of the jump function, you might consider using a bouncing mode of travel along the entire length of the track. You won't lose any speed, you'll still retain total control of your vehicle, and you can avoid many of the gaps and obstacles in the track by flying over them. ■

Reviewed by Gary V. Fields

The New Aladdin

Computer: Amiga
Publisher: Disk Publications, Inc.
12200 Park Central Drive
Suite 310
Dallas, Texas 75251
(800)-345-6467
Medium: Two disks per issue
Price: $19.95 per issue

"An interview with the President" included an animated and interactive conversation with President Reagan and Nancy.



For 500 years man accepted ink and paper as the best medium for recording information and exchanging ideas. Four hundred years passed before photographic film and magnetic surfaces were used to store information. And within the past ten years we have added the floppy disk and compact laser disk to the list of surfaces suitable for storing information. *The New Aladdin* is the latest publication which attempts to use the magnetic surface of a computer disk to dispense news, fiction, features and reviews — collectively constituting a disk-based magazine. Another revolutionary idea has surfaced. Will it work?

The New Aladdin is packed on two self-booting disks and is published six times per year. To "read" it on your Amiga's screen you simply wait for the familiar "Insert Workbench" prompt and insert "Disk A" instead. After the cover screen fades, a beautifully detailed genie appears, holding a pulsating crystal ball. This substitutes for the contents page of a traditional magazine. Three large icons located at the bottom of the screen serve as scanning and selection buttons. When an arrow icon is clicked the title of the next item on the file will appear. If you want to examine that article you move the pointing hand to the ENTER icon and click. The disk will spin and in a few seconds the article will appear.

An average issue contains nearly two dozen articles covering such diverse topics as movie reviews, educational advice, humor, ready-to-run programs, commercials and culinary instructions. For instance, the feature called "Tasting By Gus" spends seven screens talking about food fads and ends with a recipe for peach cobbler. I found the movie review section one of the more innovative sections in the magazine. Not only does the report give Critic Rod Downey's opinion of the movie, but it actually displays still photos clipped right from the movie. A column which will interest many computer enthusiasts is written by Ken Loss-Cutler called "New Paint for Old," which concentrates on using the computer screen as a medium for artists. He discusses the problems and solutions of the new technology and finishes with some examples of work submitted by readers.

One article which did show some of the medium's potential was "an interview with the President." It included an animated and interactive conversation with President Reagan and Nancy. The animation here is both satirical and hilarious. The screen shows a large caricature of each Reagan which talks at length. Both are well drawn and realistically animated (eyes roll and shut, mouths move and teeth flash) and their remarks are bitingly humorous. After each has their say, you can type in questions which they will answer.

One columnist fills her pages with chit chat with the stars, another offers financial advice, still another gives hints on how to raise and educate your children and yet another spends 18 pages talking about love, romance and the public's interest in both. And of course, there are a few traditional computer games like those you normally have to type in from printed listings. If you've ever used your summer vacation trying to duplicate and debug such a listing, you'll love *Aladdin*'s no wait, no sweat, no eye strain solution to that chore.

The publication's graphics can only be described as stunning—just what you would expect on an Amiga. The sound effects are just as well done, and the two mix to create an atmosphere charged with possibilities. Each title screen whets your appetite for what is to come next. Here is a publication which can do more than show. It can let the reader interact; it can animate stories, teach with examples, entertain with action, sound and dazzle.

And, like most young publications, *Aladdin*'s screens and features offer more illusion than substance. From reading the articles included in the current issue, I don't think the publication realizes what the majority of its readers will want. *Aladdin* is a magazine which only computer owners can read so I expected most of the articles to be computer related—they are not. Only a few topics in the issue used for this review were targeted for that specific interest group.

For a new publication to survive, especially in uncharted waters like disk-based publishing, it must be innovative, well prepared, launched at just the right time and a little luck doesn't hurt either. From what I've seen from reading *Aladdin* and gleaned from the news releases coming out of Dallas (*Aladdin's* home city), it is prepared to map these new waters. It's strong suit at this time is its novelty — it's different. A lot of people will try an issue or two just to see what it offers. But at $19.95 novelty alone will quickly wear thin for most subscribers.

The challenge for *Aladdin's* founders is just as formidable and exciting. If they intend to be publishing into the 21st century they'll need to determine the taste and requirements of their potential subscribers and supply those needs at an affordable price. ■



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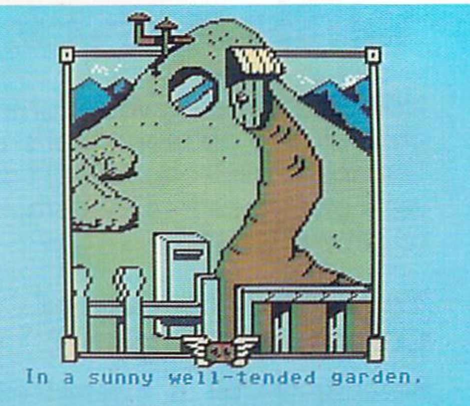
The Commodore® Connection.

Reviewed by Russ Ceccola

The Fellowship of the Ring

Computer: Commodore 64
Publisher: Addison-Wesley Publishing Co., Inc.
Jacob Way
Reading, MA 01867
Medium: Disk
Price: $34.95

Fellowship of the Ring crams all of the atmosphere and characterization of Middle-Earth onto one floppy disk.



Addision-Wesley has continued their commitment to the works of J. R. R. Tolkien. After first bringing to the software world an adventure game version of *The Hobbit,* Addison-Wesley has now begun its adaptation of Tolkien's *The Lord of the Rings* trilogy with the production of *The Fellowship of the Ring.*

The Fellowship of the Ring is an interactive text adventure with graphical representations of the locations in the game. You perform actions through the characters in the game by typing commands on the keyboard. After you enter a new location, a picture pops up on the screen showing you exactly what the adventurer sees. The game takes place in the legendary land created by Tolkien called Middle-Earth and there was so much area to explore in *The Fellowship of the Ring* that it took two sides of a disk to accommodate the adventure.

The Fellowship of the Ring closely follows Tolkien's novel in plot but differs from most other software versions of novels in that you aren't simply playing out the book, but rather have the opportunity to do whatever you want in your explorations. Don't expect to read the book and then just breeze through the game. Addison-Wesley specifically designed *The Fellowship of the Ring* so that the goal of the game could be reached in different ways, depending on the player.

The Fellowship of the Ring is divided into two parts, one on each side of the disk. Both can be played as stand-alone adventures, with the first part corresponding closely to Book I of Tolkien's classic and the second part beginning in the same area of Middle-Earth as Book II. Although you can start your game on either side of the disk, I would strongly recommend that you play the first part before the second, only because you gather a lot of items in the first part that make things easier in the latter half of the game.

In *The Fellowship of the Ring,* you have the ability to assume the role of any or all of the four hobbits from the original work: Frodo Baggins, Pippin, Merry or Sam. By accepting control of as many hobbits as there are players of the game, up to four people can play *The Fellowship of the Ring* by taking turns with their characters. Otherwise, if you're playing alone you must remember to switch characters every now and then, for the game expects you to control the actions of all characters.

If you only choose one character at the beginning, the other three are computer-controlled and follow your character, performing ordinary actions automatically. Choosing more than one of the hobbits is a way of making *The Fellowship of the Ring* more difficult, just in case you find it too easy — which you won't.

You start your travels at Bag End in Hobbiton, as either Frodo, Sam or Pippin, who are all awaiting the commencement of the adventure. I would suggest the choice of Frodo as your character for a few games, until you feel more comfortable with the other three hobbits and their personalities. Frodo is the main character in *The Fellowship of the Ring* and has possession of the One Ring; these are attractive qualities to the beginner, for Frodo can disappear by using the ring and most of the action is performed by him.

Pippin, Merry and Sam have their redeeming characteristics as well, so don't rule them out as your alter ego in Middle-Earth. Sam is very loyal to Frodo and will follow him everywhere he goes in order to protect him and the ring in his possession. Sam also is a sturdy and strong hobbit. Merry has the added benefit of being able to swim, one of the few hobbits who can. Use this fact to your advantage.

Pippin is a very agile hobbit and becomes very useful to the adventure when a quick foot and deft aim are needed. Frodo leads the group in intelligence and can observe potential danger faster than the other hobbits. Choosing all four characters to control is a difficult task and recommended only to those who know of these characters from both books and practice games. Although knowledge of Tolkien's works is not necessary in the play of *The Fellowship of the Ring,* reading *The Hobbit* and the first book of *The Lord of the Rings* surely adds to the enjoyment of the game and the skill with which the adventurer can pursue Frodo's adventures.

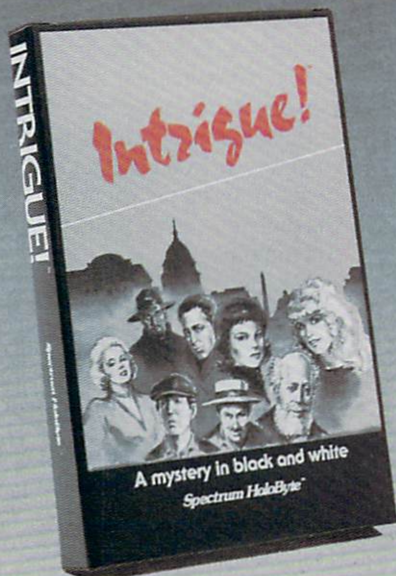
Tolkien fans can do nothing but rave over *The Fellowship of the Ring*. It takes all of the atmosphere and characterization of Middle-Earth at the End of the Third Age and crams it into one small floppy disk. The reason for the difficulty in the game is the avoidance of the novel's plot. Sure, you can try to play your adventure exactly as it happened in the book, but you may have trouble.

There is no right or wrong action in the game. What happens depends on what you or others have done earlier in the game. So, just because there are a pack of Wargs attacking you near the Misty Mountains at one moment in the game doesn't mean that the pack will be at that place the next time you come back. This degree of randomness sets *The Fellowship of the Ring* apart from other adventures and truly gives a challenge to the player, whether a novice to Tolkien's land or someone who has memorized all of the

Continued on pg. 36

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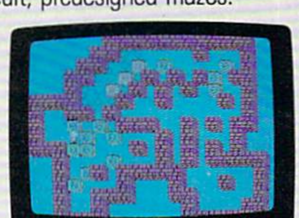
Apple *II* Version

Available on Apple *II* 48K and Commodore 64K

A STRATEGY MAZE GAME

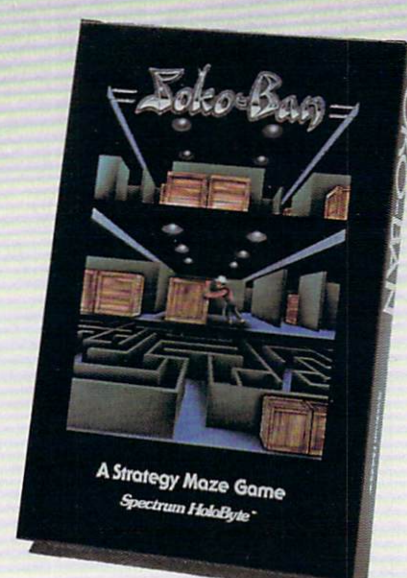
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Continued from pg. 34

events and people of *The Lord of the Rings*.

Although the pictures that come up on the screen upon entering a new location are optional, they add to the overall enjoyment of the game. Play the game with pictures until you've seen most of the areas at least once. The graphics used in the pictorial representation of Middle-Earth are excellent and capture the flavor of the original drawings made by Tolkien. By the way, traveling through Middle-Earth without using the pictures is quicker because disk access time is cut to a minimum.

Despite all of the randomness associated with the game, there are two goals that must be met at some point in the game. First, the game does not begin with Merry present. Sam, Frodo and Pippin must travel to Crickhollow to find him. Also, Frodo must travel to Rivendell, where Elrond will tell him what he must do with the ring that he carries. These two things must be done to complete the game. Other than that, you're pretty much on your own.

A way to check how close you are to the end of the adventure is to type SCORE in as a command. You'll be given an indication of the percentage of the points possible that you've scored. From this information, you can sense whether you must finish up quickly or whether you have room for further exploration. In either case, *The Fellowship of the Ring* is an excellently designed adventure that adds new dimension to the world created by J. R. R. Tolkien.

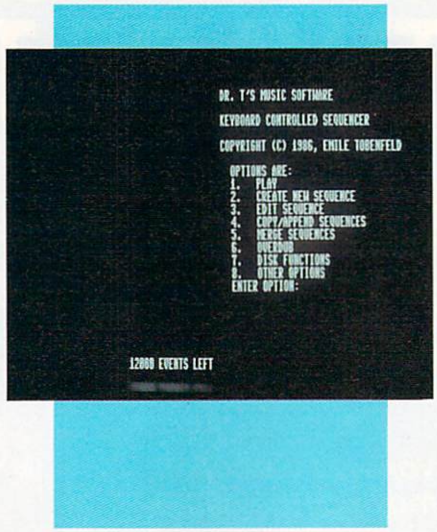
The Fellowship of the Ring is, in itself, worth the ticket price. You are, however, treated to a lot more in the package, making a purchase of the adventure more economical. Along with the game disk, you get a small guide to the game in book format, a player's reference card with map of Middle-Earth and a copy of Tolkien's book that lends the title to the game. What more could an adventurer ask for? A quick perusal of the novel can help a lot in the journey of Frodo, as directed by your hand.

I can't really give any hints for play of the game because of the dependence of the player's actions on future events. However, experiment with the characters and places and don't rely on what happened in the book. Be careful in the marshes and woods and don't be afraid to talk to strangers. Remember, as Frodo, don't wear the ring too often or you'll be taken in by it's power and doomed forever! ■

Reviewed by David Brooks

Dr. T's C128 Keyboard Controlled Sequencer

Computer: Commodore 128 (with MIDI Interface)
Publisher: Dr. T's Music Software
220 Boylston Street, Suite 306
Chestnut Hill, MA 02167
(617)-244-6954
Price: $225.00



If you are an open-minded musician with ideas that go farther than your technique, I think you will find this program logical and easy to use.

Every now and then a product comes along that stands out so clearly above its competition that it defines its own class. I believe *Dr. T's C128 Keyboard Controlled Sequencer (KCS)* for MIDI-compatible electronic musical instruments is such a product. A MIDI sequencer, when used with an appropriate hardware interface, allows you to record, play, and edit music from your computer. (Bear in mind that such programs do not use the Commodore SID chip, but require external sound-producing hardware.)

Although Dr. T's Music Software may not be a household word, their *KCS* has been around for a few years. The first version for the 64 was interesting in its concept but had a few serious rough edges. The newly released *C128 KCS* is an enlarged and greatly enhanced version of the *C64 KCS*. It operates in the 80-column mode, where it takes advantage of the FAST command to speed up some of the editing functions that are still implemented in BASIC. The *KCS* is not a flashy program — it would be an understatement to note that Dr. T's software has never relied on fancy graphics — and no attempt has been made to jazz up the visual display with the 128's enhanced BASIC graphics commands. The various program screens are limited to straightforward presentation of relevant information. As a result, this program may seem austere, a bit unfriendly, or even amateurish at first, especially if you are used to the highly developed graphics of computer games.

Dr. T's KCS tends to approach editing in mathematical rather than musical terms. Consider the "autoquantizing" function that is common to MIDI sequencers; this allows you to play and record a series of notes and then correct the rhythms you've played. Thus, you can create rhythmically perfect sequences even if your keyboard technique is less than perfect. Many programs express this function in terms of musical divisions, as "Correct the part to the nearest sixteenth note." *Dr. T's KCS* implements autoquantizing in terms of the MIDI clock, which ticks at the nominal rate of 24 times per quarter note. So, to correct a part to the nearest sixteenth note, you tell the program to correct it to the nearest six ticks of the MIDI clock. This may seem awkward at first, but it is just one example of the complete flexibility of the *KCS*.

The *KCS* performs all the expected real-time record and playback functions, including the chaining of sequences and the ability to listen to previously recorded parts while adding additional parts (overdubbing, in musical terms.) However, the real superiority of the *KCS* lies in its powerful editing functions. Most programs still force you to access MIDI events as though you were working with a fancy tape recorder. You can "fast forward" or rewind to a particular note in a particular measure, or you can record new parts "on the fly" with a "punch in/punch out" function. With this approach you may remain price to be paid: you are kept one level away from the actual contents of the MIDI information sent through the interface.

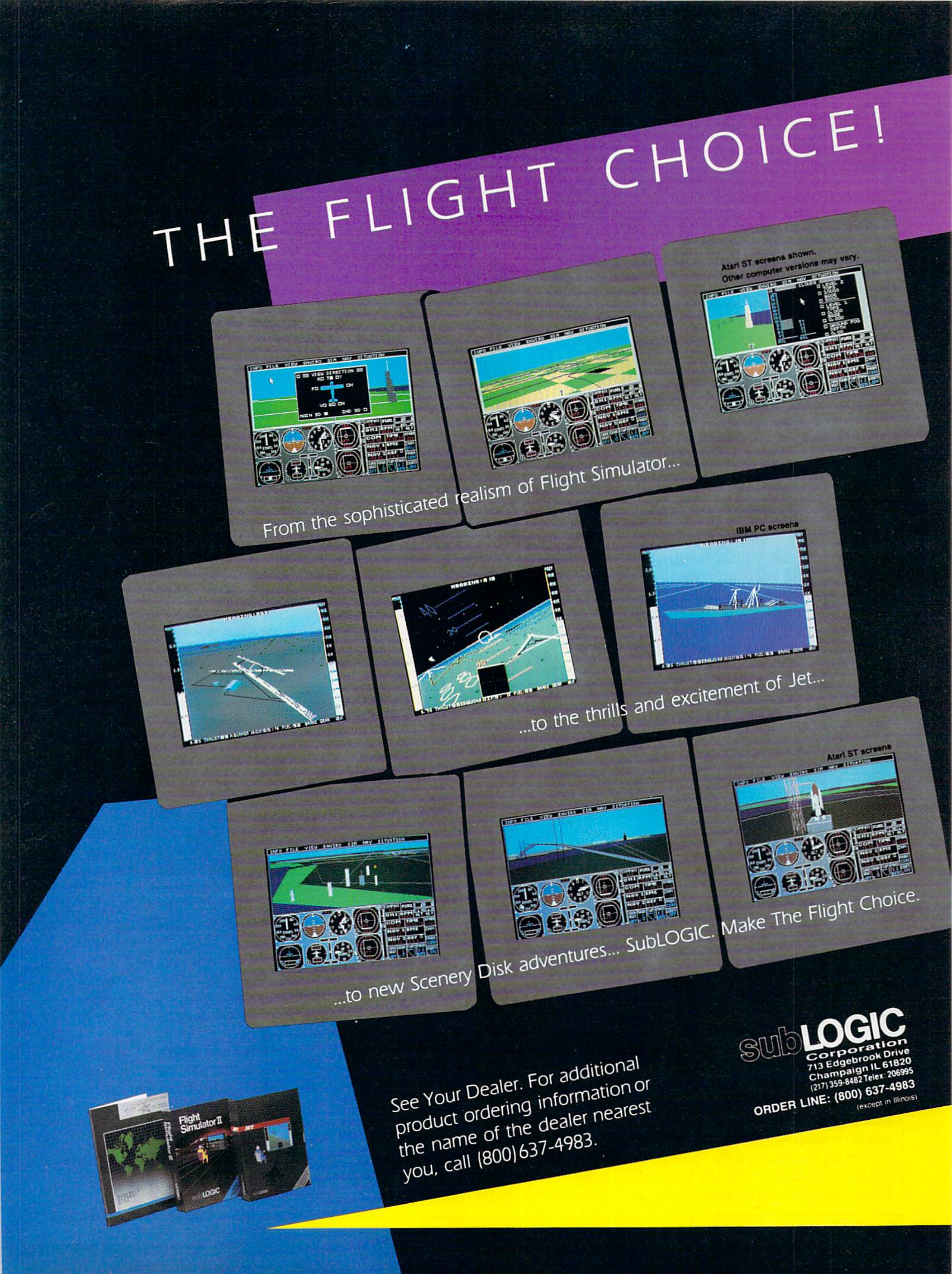
Dr. T's KCS treats MIDI events as a data file that you can access and manipulate with complete control. For example, you can change the length of every individual note in a sequence by specifying the number of MIDI clock units between the note-on and note-off event. (Musically speaking, you are making the notes more or less staccato without changing their rhythmic values.) Space doesn't permit a listing of all the editing possibilities, but the *KCS* editor works essentially like a good word processor: you can create, add, delete, move, merge, copy, append, replace, and modify MIDI events just like a word processing program operates on words. You can even embed special MIDI commands just as you embed formatting and printer commands in text files.

Many MIDI sequencers will work with only one hardware interface, but the *KCS* supports both Sequential (now being marketed as the Model-T interface by Dr. T's Music Software) and the widely available Passport interfaces. You can obtain MIDI clock signals to drive your system from a computer-generated clock under control of the *KCS*, externally from a MIDI clock (with either a Sequential, Model-T, or Passort interface), or externally from a pulse clock (with a Sequential or Model-T interface.)

As a spur to creativity in the application of MIDI technology, Dr. T has developed what he calls algorithmic editing. As far as I am aware, no other program has even attempted to give musicians access to this kind of user-controlled editing. With the algorithmic editing options you can apply a wide variety of editing functions to selected portions of your MIDI files. For example, you can edit particular notes in the scale or notes of a certain length, or you can operate on randomly selected MIDI events.

Viewed as a whole, the algorithmic editing options have a slightly mathematical flavor. Some of them have immediately obvious applications in conventional music, while others do not (at least to me). I will probably never use some of them even though I find their concepts intriguing. The point is that the options are there if you want to try them, they're not in the way if you don't, and you won't find them

Continued on pg. 127


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Reviewed by Gary V. Fields

Uninvited

Computer: Amiga
(Kickstart V1.2 required)
Publisher: Mindscape Inc.
3444 Dundee Road
Northbrook, IL 60062
Medium: Disk
Price: $49.95

Uninvited begins as all decent nightmares do, on a lonely road during a lightning-shattered night. You swerve your car off the road to avoid a shadowy, human form which appears in your headlights out of nowhere. When you regain consciousness you are alone, the car is a crumpled mess and you can smell gasoline. Before you can worry where your younger brother has disappeared to, you must escape the wreck. Left with no other options, you knock on the heavy doors of a time-worn mansion. Though the task at hand may seem simple — find your brother and a ride home — nothing in *Uninvited* is easy. Before you two are reunited, you'll have to explore the mansion, outwit the darkest demons of your sweatiest nightmares, unravel the mystery of the previous inhabitants of the house, catch a fleet-footed demon with a key, and look at the face of death eye socket to eye.

Uninvited is a combination text/graphic/sound adventure with the emphasis on graphics and sound. Unlike a traditional text game, very little typing is required to play the game. And unlike the new breed of combination text/graphic games, much of *Uninvited* is animated but not to the level that it could be compared to an arcade game. When you begin (you are in a wrecked car) six windows will appear on the screen. The largest displays your present location (in this case an interior of the car shown from the driver's seat). Below this is an area where the game's text is scrolled into view. Three smaller windows display the avenues of travel possible at any particular time, your personal condition and an inventory of all you are carrying.

A final window serves as your communication link with the game. By using the mouse and clicking on this window, you can examine anything, open, close or operate objects, go places, hit objects in the graphic window and consume anything you can get into your mouth. The final option in this window is 'SPEAK.' When it is selected another window opens so you can



The graphics are beautiful (in a gruesome sort of way), and the logic is believable (for a nightmare).

communicate (by typing) directly with the objects and beings you will encounter in the haunted mansion.

I really like this easy game interface. Rather than telling the game to move an object, all you have to do here is pick it up with the mouse pointer, and drag it to a new location. To move objects in your inventory you simply drag them to your inventory window. I was pleased with the game's surprisingly cooperative attitude. It allows you to handle and rearrange everything in the mansion. Unlike text games where, with few exceptions, only the objects necessary to complete the adventure can be handled, moved or used, nearly every object (that's hundreds) in the mansion can be manipulated. You can smash mirrors, open and close books or drawers and move every object in the house, large or small.

The sound effects of *Uninvited* are realistic and spine chilling. When lightning flashes, thunder rolls and viewers jump. When you make your way into the mansion the main door creaks creepily and slams shut just like it should in any good horror movie. If you hit an object or break a glass the sound alone will inform you of what has happened. Because the game uses almost all of the Amiga's impressive abilities, you'll not only hear and read what happens, you'll see the action in the main graphic window as well.

I can't say the game uses all of the system's abilities because it doesn't employ the Amiga's built-in voices. Having enjoyed the realistic and logical use of speech in other Amiga games like Electronic Art's *Chessmaster 2000* and Jagware's *Alien Fire*, I was disappointed speech wasn't included here.

Because the game is mouse controlled, exploring the house requires less time than earlier all-text games. And because only a zombie could finish the game nonstop, there is an option to save your place in the adventure at any time. The mouse interface is surprisingly simple to adopt. In fact the game is designed so it guesses what you mean if you don't do everything just right. For instance, to go through a door you first select open or operate from the option menu, then click on the door you want opened (you can point at the door in the main graphic window or in the exit window). But if you are like me, I get carried away sometimes and try to get the character to walk though a closed door. If I try this (click the mouse) twice, the program assumes I want to open the door (since that is a logical action) and opens it for me. If you want to open a door and pass through it, you simply keep clicking on it and the program takes care of you.

For overall quality, I would give *Uninvited* an A minus. The game is wonderfully designed, the graphics are beautiful (in a gruesome sort of way), the speed is good, the challenge is demanding, the logic is believable (for a nightmare), sounds are realistic (most are digitized) and the easy-to-use interface is ideal. So why the minus? No speech. Oh well, the next Mindscape adventure will have it.

If you are one of those people who can't resist horror movies, gets a real kick out of being scared witless and just loves the cold sweats caused by terror brought from beyond the grave, this is your game. But be prepared — after you enter the mansion of the *Uninvited* you may end up sleeping with your head under the covers. Unlike a real nightmare, this is one you'll be happy to lose sleep returning to time and time again. But don't be surprised if you catch yourself looking over your shoulder or cautiously watching reflections in your monitor's screen. Remember, it's silly to get nervous playing a simple game — isn't it?

Oh, before I forget, here are some important hints for you — never approach the southern belle dressed figure in the main hall, never enter the cell where the dead headless prisoner appears and never, never play *Uninvited* alone in a dark house. Two of those actions are extremely dangerous to your character's life and the other won't do you any good either. ■


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Reviewed by Russ Ceccola

Action Biker, Bounder, Captain Zapp, Shogun

Computer: Commodore 64
Publisher: Mastertronic
73116 Grove Road
Frederick, MD 21701
Medium: Disk
Price: $9.99 each

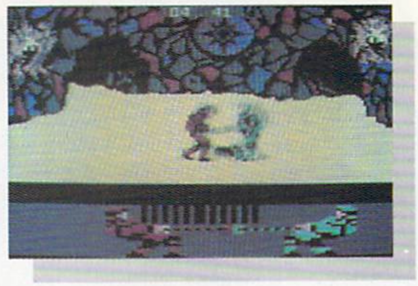
Mastertronic recently added four new titles to their large library of games, most of which cost between $8 and $15. *Action Biker, Bounder, Captain Zapp* and *Shogun* are evidence of the unique ideas associated with Mastertronic software.

Action Biker

Your challenge in *Action Biker* is to collect forty different items associated with a motorcycle and road race and make it to the drag race at the end of the game. Examples of these items are: cooling fins, headlamp, electronic ignition, fog lamps, road map, oil can, turbo charger and tool box. These forty pieces are things useful in creating the ultimate racing vehicle, preparing you well for the upcoming race.

The playfield is a large town that scrolls in four directions. Thus, there are many ways to get from place to place. Scenic features include a roller coaster, drag strip, elevated roadway, numerous fenced-in areas, ramps, a lake and streams and a two-lane main road. The most important place in town is the gas station. This is where you replenish the supply of fuel needed to complete the game. Fuel runs out quickly in *Action Biker*. When the fuel bar enters the red it's time to head to the gas station. Just stopping the bike at the station fills the tank. You can find a couple of items with each refill of the tank. An important item to find is the large fuel tank, which adds another level (green) to the fuel bar, extending the search time between refills.

Items are found one at a time, in the same pattern each game. They all look like flashing white boxes on the screen. By riding over them with your cycle you add them to your possessions. A message then pops up, telling you what you've



found and if it serves any purpose. The large fuel tank is the eighth item you look for, so it is imperative that you get the first seven as quickly as possible if you plan to beat the clock. To help in your search, Mastertronic includes a map divided into sectors, with a list of the items and where they are found, in the order you find them. Although you can find the flashing boxes without the *Action Biker* Escape Kit, I suggest using it for the first few items to get the feel of the game.

Now a few hints and words of advice for those having a little trouble with *Action Biker*:

1. Take things slowly at first. Don't speed around the course; you'll only crash and lose another bike. You should only speed at the end and while jumping off ramps.

2. Don't be discouraged if you have no bonus points at the end of the game. The time limit is only for the experienced to beat. The first few times playing *Action Biker* should be spent trying to make it to the race.

3. Finally, it takes practice to handle the motorcycle well. Practice tight turns the most. At low speeds, just go around and around in tight circles in an open area to develop that skill.

Bounder

Bounder requires that you direct a bouncing tennis ball through ten levels of play, bouncing from one end of the course to the other. The only major landscape you can travel on is a series of grey slabs arranged in paths and other assorted shapes. There are a few special slabs which I'll get to later. The important thing to remember is that you must bounce the tennis ball to the end of the course.

The joystick is your only connection to the tennis ball world. Those without joysticks may use the keyboard, but I personally find it a necessity to use a stick for accuracy. The trickiness lies in the fact that you must time your jumps so that you jump to another slab immediately after the ball touches a slab. The graphics are sufficiently detailed and colorful so that you can see when the ball is in the air or bouncing off a slab. The ball gets smaller as it approaches a slab and considerably larger when at its apex in the air. Still, if you hold back the ball to the bottom of the screen, the ball bounces a lot slower. If you have the joystick pushed forward most of the time, the tennis ball bounces much quicker.

Don't think that bouncing off grey slabs is all you've got to do. There are a lot of extra "guests" you must avoid in your life as a tennis ball, such as missiles, rotating bombs, darts, coins, mosquito birds, terradactyls, fireballs, mines, shrapnel from exploding mines, binoculoids and sticks. All come in large numbers and will blow up your ball on contact.

Each course has its own flavor and combination of possible landscape elements. You can not bounce on water, mountains, walls, forests or volcanos, leaving only grass and grey slabs for safe landings. There are some special squares that can be beneficial to you, depending on how you use them. If you land on black arrows, the ball jumps higher and can go longer distances without hitting ground level again. Landing on question marks can either be beneficial or detrimental to your game. You can be awarded with extra balls, extra points or extra jumps which are needed in the bonus levels. Everything else is deadly underneath a question mark. Occasionally, fans are set on slabs to blow you all around the screen. You can't avoid them, but use them to blow yourself in the direction you need to go.

Teleport slabs (black and yellow circles) will transport you automatically to the nearest teleport slab. Again, use them with caution. The last special slabs are the ones that contain plungers. These will shoot you across the screen at high speed and can be used to make a long horizontal jump. All of these special slabs are placed in strategic locations. Keep on playing *Bounder* until you get through another course and you'll feel like you've accomplished something.

Bounder includes a bonus level between each normal course. In it, you must bounce from question mark to question mark in as few jumps as possible, for you have a limited number of jumps at the bottom of the screen. After finishing the

Continued on pg. 124

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(IBM screen shown. Actual screens may vary.)

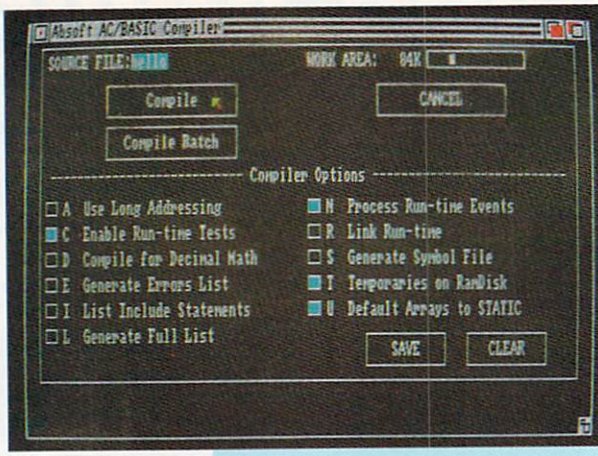


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Reviewed by Tim Jones

AC/BASIC Compiler

Computer: Amiga (512 K required)
Publisher: Absoft Corporation
4268 Woodward Avenue
Royal Oak, MI 48072
Medium: Disk
Price: $199.95



The compiled version of a program is a fully multitasking program and is usable from both the Workbench and CLI.

This spring, Absoft Corporation introduced the *AC/BASIC* compiler for the Amiga. Now, AmigaBASIC programs can enter the world of serious programs like those written and compiled in C, PASCAL, Fortran and Assembler. I know some people will say "there's no way that even compiled BASIC can compete with any of those other languages," but, I'm only referring to the stand-alone and multitasking capabilities that were previously unavailable to an AmigaBASIC programmer.

If you are a computer user, more than likely you are familiar with the BASIC programming language. Aside from the the fact that it's easy to learn and usually included with any computer system that you purchase, BASIC has one major disadvantage: it's interpreted. This isn't a problem for programs that don't require blinding speed, but for programs that perform large calculations or heavy duty graphics manipulation, it can become a serious handicap.

Until recently, AmigaBASIC programmers had to live with these problems. Most either learned to use the Amiga's library functions to add a bit of speed or opted for a lower level of performance in the final product. This resulted in programs that appeared sluggish and unresponsive to the user as well as lacking in the kinds of functions that set the Amiga apart from other computers.

AC/BASIC is compatible with AmigaBASIC (almost to a fault) and every program that I've tried to compile with it has compiled with only minor changes. The compiled version of a program is a fully multitasking program and is usable from both the Workbench and CLI. The compiler automatically creates an ICON for the program that is compiled. The only restriction is that it requires version 1.2 of Kickstart and Workbench for operation.

There are three forms in which an AmigaBASIC program can be stored; as a BINARY or COMPRESSED file (the default), as a PROTECTED file (which cannot be listed or edited) or as an ASCII file (standard text). If you are going to use *AC/BASIC* to compile a program, it must be saved in the ASCII format. To do this, save the file using the SAVE command in the COMMAND or OUTPUT window, instead of from the SAVE menu item, and follow the filename with ",a".

For example: SAVE "ThisFile",a

Once your files are in ASCII format, you may convert them to stand alone runnable or clickable files by invoking the *AC/BASIC* compiler from the Workbench or the CLI. When invoked from the Workbench, or from the CLI with no additional arguments, you will get an introductory screen with a single menu attached. You must use the parameters of this menu, either by selecting one with the mouse or by using a keyboard shortcut, to start the compile process. The first step is to tell *AC/BASIC* which file you wish to compile by opening it.

Once you fill in a filename, you are taken to the control panel. Here, you may select or deselect various parameters that *AC/BASIC* uses while compiling your programs. These parameters allow you to create an error listing file, a symbol table file, select whether error checking will be performed or if event trapping will occur, if the Run Time Library is to be compiled, the size of the work area allocated to *AC-/BASIC* (to facilitate multitasking during a compile session) and other functions that will be discussed later. This is done by clicking the mouse button on the gadgets beside various option names. If you find that you are using a particular setup most of the time, there is an option to allow you to save the setup so that *AC/BASIC* will be properly configured every time you start it up (this can be a time saver when using it from the CLI).

When everything is properly configured, you click on the COMPILE gadget and *AC/BASIC* will start to work on your file. As compilation progresses, various messages are displayed on the screen letting you know the status of the file being compiled. When the compilation is complete, you will be told the size of the compiled file (less the Run Time Library), the time involved and the number of lines per minute required for this particular file.

If an error occurs during this segment, you will be informed of the line on which the error occured and what the general error was. If you were creating an error listing, the screen will prompt you that an error has occurred during compilation. The error is then written to the error list (which carries the same name as your BASIC program with .lst appended to it). You would then exit the compiler and examine your source code for the error listed. Since *AC/BASIC* reports line numbers in its error reports, you will have difficulty locating the faulty code in the AmigaBASIC editor. For this, I use the Shareware program *UEdit* as it will allow you to move to a specific line via its number.

Assuming that no errors have occurred, you just exit the compiler via a close gadget or menu option and you have a ready-to-run program waiting to be clicked.

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Reviewed by Gordon B. Owens

Mini Chief

Computer: 64,64C,128,128D
Manufacturer: InConTrol Inc.
P.O. Box 863
Middletown, MD 21769
Price: $795.00
(20 MByte version - including a 1571)



Until recently any hard disk drive available for a Commodore computer has been very expensive, unreliable and required a non-standard interface, not to mention the fact that those big black boxes seem out of place no matter where you put them. While a variety of hard drives are now available on the market, the *Mini Chief* from InConTrol (ICT) is one of the brightest new stars on the hard drive horizon.

For those of you in the dark about hard disk drives, allow me to enlighten you. A hard drive, like a floppy drive, stores programs and data (collectively known as files). There are three primary advantages to owning a hard drive as opposed to a floppy drive. A hard drive is generally much faster than a floppy, has a much greater storage capacity and virtually eliminates the need for constant back and forth swapping of floppies.

A hard drive's recording surface, unlike a floppy diskette (a piece of plastic coated with a magnetic oxide), is a rigid metal platter covered with the same type of magnetic oxide. A hard drive is capable of much faster read/write operations than a floppy because it can spin at a much higher RPM than a floppy diskette is capable of without fluctuation. The *Mini Chief* operates at 3,000 RPM whereas the average floppy drive spins a diskette at somewhat closer to 300 RPM. This enables a computer to find and load your file much faster, though loading time also depends on the transfer rate of your computer. Thus, a hard drive will work faster on a Commodore 128 as opposed to a 64. Since a metal platter has little or no fluctuation it allows the application of a much greater density of magnetic oxide, which in turn, allows the storage of a much greater density of data.

The *Mini Chief* is a combination 20 MB hard drive and floppy disk drive, both in the same cabinet. The unit is compatible with the 64, 64C, 128 and 128D. For this review I tested the hard drive on a 128 in all three modes: 64, 128 and CP/M. The hard drive includes all necessary hardware and cables for immediate connection to your system including an external power supply in an attractive black and white metal case. The hard drive has its own hard disk utilities which are stored on partition 120 of the hard drive when it is shipped from the factory. The unit comes from the factory formatted into 120 separate partitions. In this instance one partition corresponds to a single 664 block formatted floppy; in fact the computer looks at each partition as a separate floppy and treats it as one. The HM4 mode (initialize chain) allows you to chain a series of partitions together to create a large storage area.

> The *Mini-Chief* is a combination 20 MEG hard drive and floppy disk drive, both in the same cabinet.

The floppy drive installed with the hard drive is an actual Commodore-made, dyed-in-the-wool, 1571. Not only have they supplied you with a 20 MB hard drive and Commodore-made 1571 disk drive, but with the exception of the power supply they put it all in a 1571 cabinet — same height, width and depth. The outward appearance of the hard drive differs only slightly from that of a regular 1571. The unit has a screw-type connector in back for the power supply connection and no on/off switch on the drive itself. The connection for the power cord and the on/off switch have been moved to the back of the power supply. In addition, the hard drive has two more L.E.D.'s on the front panel as well as an up and down toggle switch called the BOS-switch. The power supply has been removed and replaced with a 3.5-inch 20 MB hard drive and a Western Digital Controller board. In fact the hard drive and controller board are the same type as those used in IBM PCs and compatibles. Since ICT has made no alterations to the hard drive or controller board, it could be removed from the 1571 case, and installed in the PC-10. The drive itself, with the exception of the power supply, connects to the 128 and 64 just like a standard 1571 disk drive. The unit has dual serial ports on the back as well as the usual dip switches for changing the device number. Since the hard drive connects to your system in much the same fashion as a standard Commodore floppy drive, installation is pretty much self explanatory. The manual included with the drive covers the basic commands very well but doesn't give much technical information to the end user.

After connecting the hard drive to my system and verifying that everything was working, I began testing it. I tested the hard drive in three basic categories: operating and software compatibility, speed, and ease of use. If software is not compatible with the hard drive, benefits to the user are limited. The hard drive will not function with software that uses disk error protection schemes. It will function with any unprotected software you might have as well as all public domain software. Unfortunately most manufacturers of 64 and 128 software have complex protection schemes, thus making it incompatible with the hard drive. Some software manufacturers do offer unprotected copies of their software for an additional fee. Even if you can't load the software itself to the hard drive you can, by using HM3 mode, load the software and then transfer file access to the hard drive as in the case of data bases, word processors, etc. For those of you who are game players, your chances of obtaining the majority of 64 games without protection are very slim so a hard drive would be of little benefit to you. I used mostly public domain software with the exception of the Timeworks productivity series for the 128 and *The Pawn* by Firebird. For you *GEOS* fans, I did test *GEOS* with the hard drive. Although it is currently incompatible due to the *GEOS*

Continued on pg. 127

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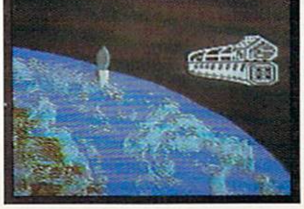


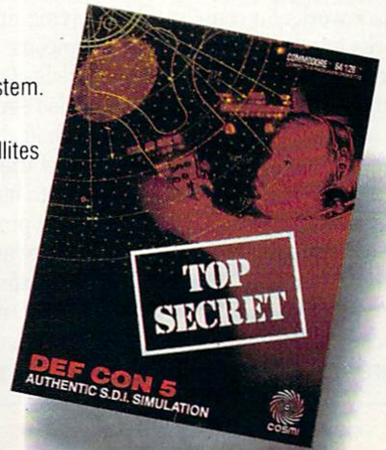
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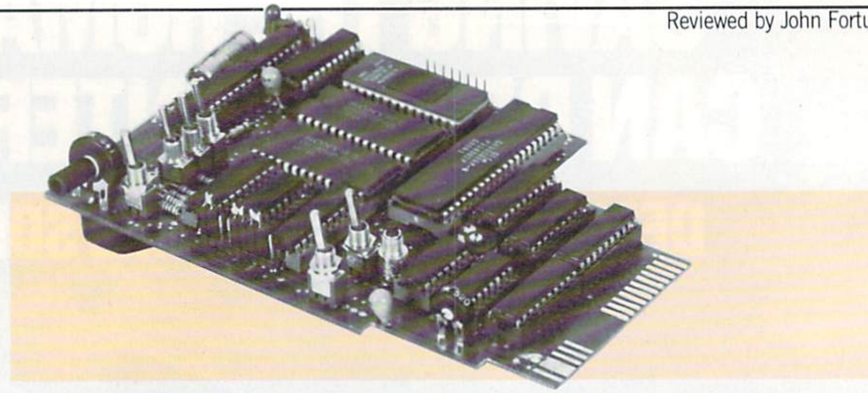
DEFCON 5 for C-64/128 is priced at $19.95. For IBM PC, $24.95.

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Reviewed by John Fortunak

Turbo Processor



Computer: Commodore 64
Manufacturer: Swisscomp Inc.
5312 56th Commerce Park
Tampa, FL 33610
Price: $189.00

It's the ultimate add-on for plugging into your 64 cartridge/expansion slot — a computer. It makes the 64 run four times faster. It has its own microprocessor, its own 64K of RAM, and a battery that keeps BASIC programs in storage RAM, even when you shut off the 64.

This harbinger of third-generation add-ons is useful for kids who play games, as well as serious programmers who crunch calculations which yield three-dimensional shapes. It's useful for running home productivity software tools like word processors, as well as business productivity tools like spreadsheets. And it's a hacker's dream. As we shall see, it's not without some minor glitches that are inherent in all breakthrough devices. Even so, it has extraordinary potential.

Its potential lies in the processing speed of the microcomputer chip inside the *Turbo Processor*. At 4 MHz, four times that of the 6502 chip inside the 64, the *Turbo Processor* can run programs four times what they run at in the 64. In essence, when plugged into the expansion port, the *Turbo Processor* bypasses the 64 completely, and handles all processing and memory functions. The 64 does nothing except handle the I/O functions. The *Turbo Processor* doesn't have video driving chips though, so some of the software that makes heavy use of the I/O will not appear to be speeded up.

Now, let's find out just what the *Turbo Processor* does, and doesn't do. First, we'll start with the easy details. Simply put, when the *Turbo Processor* works for commercial software, it works great. *Flight Simulator* was quite impressive. The *Turbo Processor* quadrupled the speed and worked quite well. For anyone who uses *Flight Simulator* and doesn't want to buy an Amiga, this card is great.

Newsroom was another case of amazing visual results. If you're moving artwork around in the photo-lab of *Newsroom*, you also notice a great difference. Without the *Turbo Processor*, it seemed that leaning on the joystick would keep the clip-art

At 4 MHz, the *Turbo Processor* can run programs four times what they run at in the 64.

moving around the screen. Once you've moved the clip-art, with the *Turbo Processor* in the expansion port, you'll never want to change.

Vanna White moved four times faster in the *Wheel of Fortune* (Sharedata) game. The wheel spun four times faster. The time to correctly identify the phrase was four times shorter. All because of the 4 MHz clock in the turbo's 65816 microprocessor chip.

War simulation software is another area where this add-on computer makes believers out of skeptics. Action seemed quicker without the long periods of time waiting for data to be processed and sent to the screen.

WordPro 3 Plus/64 was one word processing program I tested with the *Turbo Processor*. For those also involved in the IBM environment, the *Turbo Processor* brought moments of deja vu. Cursor movement was zippier. Scrolling seemed almost instantaneous. Activating the cursor "speed commands" built into the *WordPro* software itself, made the up and down cursor commands look like instantaneous screen changes. Deletion of letters became as fast as deleting lines of text. Transferring lines of text seemed almost instantaneous.

Spreadsheets and data processing software is also expected to run faster, because of their data-crunching nature. In fact, 50% of the *Turbo Processor* sales have been to businesses for use with spreadsheet programs.

Some software — like *LOGO, Sargon III* and *Ghostbusters* — worked, but showed no noticeable difference in operation. These games rely on the timing of I/O interrupts, rather than program timing loops that could be accelerated. So even though the program code is executing at 4 MHz, these I/O systems execute at the normal speed, and the game doesn't seem to accelerate.

Other software did not work at all. *World Games* did not load. *Print Shop* did not load. *Sea Fox* did not work. It may be because of a caveat emblazoned in the *Turbo Processor* manual itself. This caveat cautions that if "illegal OP Codes" are used in the program, the software will not run. *GEOS* presently does not work either. According to a Swisscomp spokesman, *Turbo Processor* designers believe only minor code changes in *GEOS* will enable the *Turbo Processor* to be compatible. Supposedly, these changes would be transparent to other, standard 64 users. Swisscomp is presently trying to establish discussions with Berkeley Softworks to formalize these suggestions.

Terminal program success was as astounding as it was initially confusing. The *Turbo Processor* was not supposed to have improved MODEM operation, especially with the MODEM being a classic I/O device. However, when the *Turbo Processor* was tested using a Commodore Model 1600 Modem and Smart 64 Terminal Plus +3 software, information from CompuServe seemed to be flying across the screen at four times the rate. Apparently the translation from ASCII to PET ASCII, done in the software translation table resident in the *Turbo Processor* RAM, was being completed at four times the rate. What resulted was a display that looked more like 1200 baud, than 300 baud — the actual transmission speed.

But the victory was only partial. About 1% of the characters were dropped. Even when the information was moved from the 64 buffer to the disk and later printed, characters were also missing. Although the characters may have been translated faster, they were being dropped.

In addition to using the above commercial software, users often run programs

Continued on pg. 125

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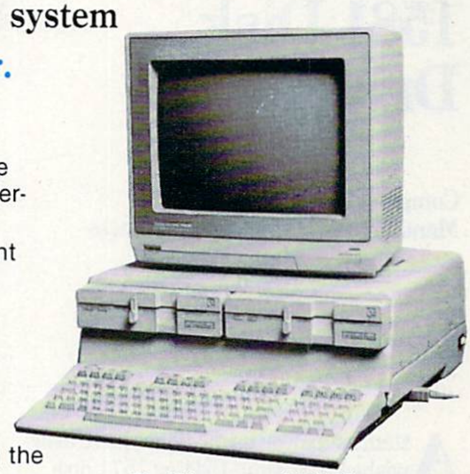
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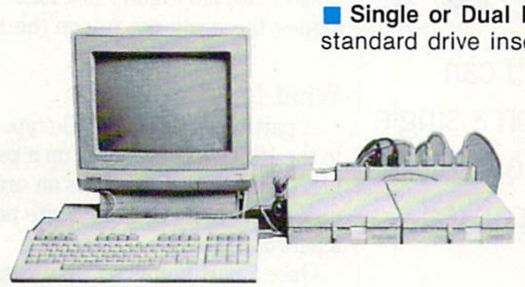
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Reviewed by Dan Baker

1581 Disk Drive

Computer: 64,64C,128,128D
Manufacturer: Commodore Business Machines
1200 Wilson Drive
West Chester, PA 19380
Price: $249.95

Attention power users: if you have ever wished that your 1541 or 1571 disk drive could store more information on a disk, there is a new alternative for you from Commodore — the 1581 disk drive. Like the Amiga, this new disk drive uses 3.5-inch media to give a higher level of performance. And with a suggested list price of $249.95, the 1581 disk drive gives real value for the dollar.

But best of all, the 1581 works with the Commodore serial bus. No fancy interface is required. You can use it with the 64, the 64C, the 128, the 128D, the Plus/4 or even the VIC-20.

With the 1581, you can store up to 800K on a single disk. And you can have up to 296 files per disk. This is more than double the capacity of a fully packed 1571 disk.

The new drive runs at 2 MHz and has a track cache buffer for faster disk access. There are now nine job buffers instead of five, so you can have more files open at once.

The 1581 uses super-side sectors for relative files just like the old CBM 8050 and 8250 disk drives. Because of this, there is no limit on the size of relative files. They can be as large as the whole disk!

To help you keep your files organized, the 1581 supports sub-directories with a new file type, the CBM file. This file type allows you to create a directory within a directory. Related files can be stored in a separate area of the disk.

1581 Data Storage

New features make the 1581 well-suited to serve as a second disk drive for your data files in demanding applications. Set up your 1541 or 1571 as unit 8. Use it to hold your program disk. Set up the new 1581 as unit 9 and use it to store your data files. The following software packages will allow you to do this:



ART BAXTER

With the 1581, you can store up to 800K on a single disk—more than double the capacity of a fully packed 1571 disk.

1) *Superscript 128* (Precision Software)
2) *Easy Script 64* (Commodore)
3) *Paper Clip II* (Batteries Included)
4) *Paperback Writer 128* (Digital Solutions)
5) *Paperback Planner 128* (Digital Solutions)
6) *Pocket Writer 2* (Digital Solutions)
7) *Pocket Filer 2* (Digital Solutions)
8) *Pocket Planner 2* (Digital Solutions)
9) *Fleet System 2* (Professional Software)
10) *Viza Star 128* (Progressive Peripherals and Software)
11) *Viza Write 128* (Progressive Peripherals and Software)
12) *CMS General Accounting System* (CMS Software)

No special version of the software is needed. These packages already work with the 1581 as the data drive.

What software comes on 3.5-inch disks? Right now the only software available are the 20 programs that come on the 1581 Utility disk. But any software you have which is not copy-protected can run on a 1581 disk drive.

For example, the disk for the word processor *Paper Clip II* from Batteries Included is not copy-protected (it uses a dongle protection scheme). You can create your own special version of *Paper Clip II* on a 1581 disk. Just copy all the files from the original 5.25-inch program disk to a 3.5-inch 1581 disk.

To do this, you can use the new, improved *Uni-Copy* program from the 1581 Utility disk which comes free with the 1581. There is enough room on one 1581 disk to hold all of the *Paper Clip II* program files and dictionary files, with plenty of space left over for your documents.

With *Uni-Copy*, you can create a 1581 version of any software that you use which is not copy protected — including your favorite programs from *Commodore Magazine* and *Loadstar* disks. (Note: some programs make direct calls to disk drive routines or use proprietary fast load techniques; these will not run on the 1581.)

What Is A Partition ?

A partition is a special file type unique to the 1581. When you set up a partition file, the 1581 DOS reserves an area of the disk in the BAM. It's like write protecting a part of the disk.

Once a partition is set up it can be "formatted." This will affect only the tracks within the partition. The result is a sub-directory. You can LOAD and SAVE files in the sub-directory just as if it were another disk.

You can tell partition files from other files by the file type. A partition file has CBM next to the file name in a directory. For an example, see the file called PIC-.DIR on the 1581 Utility disk.

This partition contains the hi-res picture files used by the program PIC DEMO 128. Try using the PARTITION AID program on your 1581 Utility disk to experiment with this partition. Or create your own partition.

Let's Get Technical

Here are the technical details for those of you writing applications.

A partition file allocates a contiguous set of blocks in the main BAM. The blocks are not linked in a chain as in a normal file. Instead the blocks in the file are treated as one large continuous chunk.

If the partition is 'formatted,' a new sub-directory is created on the first track of the partition beginning at sector 3. The local BAM will appear at sector 1 and 2 of the first partition track. And the header will appear at sector 0.

So there would be two directories: the main directory on track 40 and a sub-directory on the first track occupied by the

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Continued from pg. 50

partition. The name of the partition would appear in the main directory as a CBM type file. On disk, the file type byte in the directory would be 5.

The Partition Command

The 1581 has a new set of commands to use in setting up disk partitions. All the new commands begin with the "/" (slash) character. For instance, to create a partition use:

```
OPEN 15,8,15,"/0:PAR-NAME,"
+CHR$(T)+CHR$(S)+CHR$(BL)+
CHR$(BH)+",C"
  CLOSE15
```

where:

T is the starting track (a number from 1 to 80)
S is the starting sector (a number from 0 to 39, usually 0)
BL is the number of blocks, low (a number, usually 120)
BH is the number of blocks, high (a number, usually 0)
PAR-NAME is the name of the partition.

If you are going to create a sub-directory, your partition must:

1) Be at least 120 blocks in size.
2) Be a multiple of 40 blocks in size (120, 160, 200...).
3) Start on sector 0.
4) NOT overlap track 40, the root directory.

Once the partition file is created, you can add a sub-directory by selecting and "formatting" the partition. To do this use:

```
  OPEN 15,8,15,"/0:PAR-NAME":
CLOSE 15
  HEADER D0,"SUB-DIR-NAME,XX"
```

Along with the new "/" (slash) commands to set up and control partitions, the 1581 has some new error messages. When a valid partition is selected, the DOS returns the message:

02, SELECTED PARTITION, xx,yy

where xx and yy are the first and last tracks of the partition. If the partition is not a sub-directory, the DOS returns the message:

77, SELECTED PARTITION ILLEGAL, xx,yy

When you are finished with a partition, you can return to (select) the main directory with:

```
  OPEN 15,8,15,"/": CLOSE 15
```

Also note that the BASIC commands DCLOSE and OPEN 15,8,15,"I0": CLOSE15 will return you to the root directory.

For more on partition files, see the 1581 user's manual or the PARTITION AID program on the 1581 utility disk.

The 1581 Disk Drive: Summary of New Features

	1581	1541
Capacity	800 K 3160 data blocks 80 tracks (logical 1-80) 40 sectors per track (logical 0-39)	170 K 664 data blocks 35 tracks (logical 1-35) Variable # of sectors
Directory	Track 40, sectors 3-39 Maximum of 296 files	Track 18, sectors 1-18 Maximum of 144 files
BAM	6 bytes for each track Track 40, sectors 0 and 1	4 bytes for each track Track 18, sector 0
Header	Track 40, sector 0	Track 18, sector 0
Speed	2 MHz	1 MHz
Serial I/O	CIA 8520 at $4000	VIA 6522 at $1800
Buffers	9 buffers (0-8)	5 buffers (0-4)
Job Queue	9 job locations at $02-$0A. Headers at $0B-$1C, jobs return 0 or 1.	5 job locations at $00-$04. Headers at $06-$0F, jobs return 0.
Super Side Sectors	Yes, relative files may be as large as the whole disk	No
Supports Sub-directories	Yes, new file type—CBM, is for partitions	No
Supports 128 Burst	Yes	No

Where's the Directory

On the 1581 disk drive, a directory can be just about anywhere. The only directory you can count on is the main or root directory on track 40.

Fortunately, there is a way to show the directory from within your programs no matter where it is.

On all Commodore and compatible disk drives, the directory follows the same pattern. You can use a special channel, 96, for fetching the directory listing. Channel 96 is reserved especially for this purpose.

Because of this it is possible to write a directory sub-routine that will work regardless of which drive is being used. By using the logical directory from channel 96, the programmer does not need to know the physical location of the directory on the disk.

Here is a short BASIC sub-routine that will show the directory from any Commodore or compatible disk drive:

```
100 OPEN 2,8,96,"$0"
110 GET#2,A$,B$
120 GET#2,A$,B$: IF A$="" AND
    B$="" THEN CLOSE2:RETURN
130 GET#2,A$,B$
140 PRINT ASC (A$+CHR$(0)) +
    256 * ASC (B$+CHR$(0));
150 GET#2,A$: IF A$="" THEN
    PRINT:GOTO120
160 PRINT A$;: GOTO 150
```

This routine, or its machine language equivalent, will list the directory no matter where it is stored on the disk — including directories from within a partition. Here's a line by line explanation:

100 Open the logical directory using channel 96.
110 Trash the first 2 bytes.
120 Read the 2 line links, if they are both null, then we're done.
130 Otherwise, get the 2 bytes for the size in blocks.
140 Convert these 2 bytes to a decimal number and print it.
150 Fetch a directory byte. If it is null

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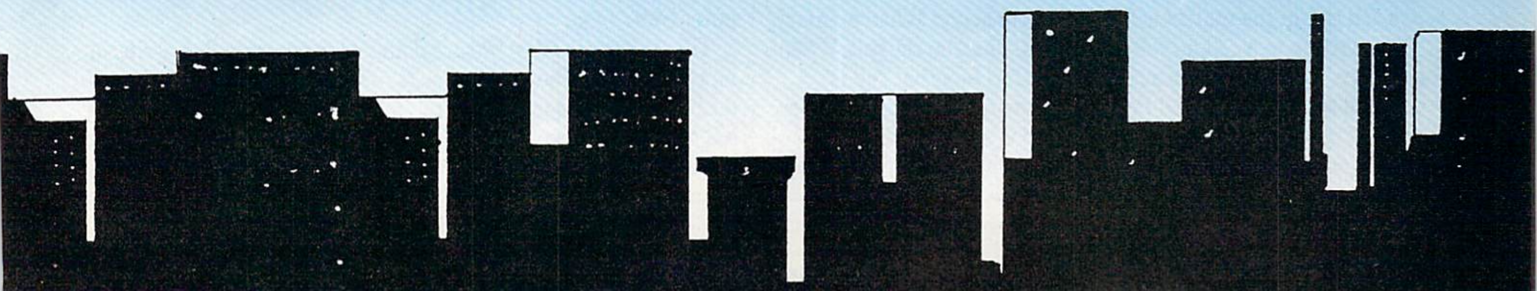
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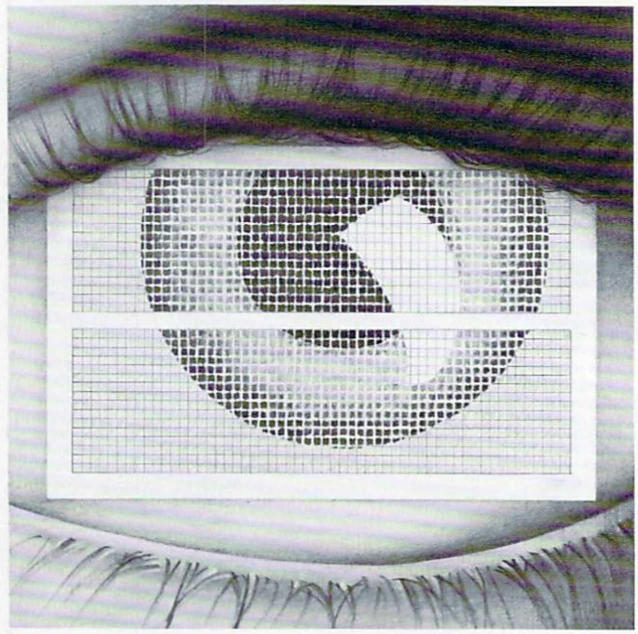
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by John Iovine

Interfacing Commodore's User Port, Part 6

Building a Digital Camera



This is part one of a mini-series. In this sub-series we will construct a digital camera for the computer. With it, we can explore various leading edge topics such as machine vision, pattern recognition and neural networks.

This is a low-cost digital camera; do not confuse this with a digitizer for video cameras. A digitizer is a completely different animal; it takes a signal from a video source, converts the signal to binary values then displays the information on a monitor.

Our project is a digital camera that our computer reads and displays on its monitor. The cost for this project is under $50. The maximum resolution of our camera chip is 128 pixels by 64 pixels. Grey scaling is possible but I don't know if we will have the time to get into this area. Regardless, the procedure to accomplish this will be given.

One unique feature of this camera is that we are not using any support circuity. The computer is handling all the timing, addressing and refreshing. This makes our circuit quite simple. The power for the chip, however, is provided by two batteries and a couple of resistors.

Let's begin by examining the main functional component of the project. Namely the digital camera chip.

D-RAM Chip

The chip that we are utilizing for our camera chip is a modified dynamic RAM chip. It is a lesser known fact that the memory cells of these chips are photosensitive. To use these cells for image processing they must be accessed in a certain manner. Let's start at the beginning.

Information in the form of binary bits is stored in arrays of memory cells in the dynamic RAM. The memory cells are arranged in a matrix array or honeycomb structure. Using standard graphing techniques, the Y axis would represent the rows and the X, columns. Each box in the graph represents one memory cell whose location is identified by its row and column numbers. Addressing to any cell in the chip is accomplished by multiplexing the address lines. Multiplexing simply means that we are using the same lines for both the row and column addresses. This is achieved using the RAS (Row Address Strobe) pin and the CAS (Column Address Strobe) pin as follows. The row address is placed on the address pins and the RAS pin is asserted. Next the column address is placed on the address pins and the CAS pin is asserted. Depending on the status of the WE (Write Enable) pin, the operation will be either a read from or write to the cell utilizing the Data in or Data out pin respectively.

Each cell in the matrix is like a tiny capacitor. When a binary "0" is written to a cell no voltage (0V) is stored on the cell. When a binary "1" is written to a cell within the chip, that cell is charged to +5V level and held. No capacitor is perfect however, and the capacitor within our RAM chip is no exception; the charge on the cell will eventually leak away. Dynamic memory circuits handle this problem by issuing what is known as a refresh cycle which recharges all the binary "1" cells to an appropriate level. The amount of time allowed between refresh cycles to retain the integrity of the data will vary with the type of chip, but it is safe to say that it usually lies between 2 and 4 milliseconds (thousandths of a second).

> Our project is a digital camera that our computer reads and displays on its monitor. The cost is under $50.

Refreshing is a little easier than what it first appears. A read or write operation to any cell will refresh that entire row that the cell lies in. Also, many chips have an RAS refresh mode which allows one to address the row only to refresh that entire row. Refreshing I'm afraid is still a hassle that must be contended with.

Our chip contains two banks of 128 by 64 pixels. Unfortunately, these banks are separated by a dead space area. To keep our picture continuous we are only using one of the two banks available to us. In the future we may come back to this project and use both banks to generate 128 by 128 pixel images.

Photo-electric effect

When a memory cell of the D-RAM chip is holding a binary "1" or is charged, light falling upon the cell will increase the rate of discharge in proportion to light intensity and duration. With this information, we can see that by filling the entire memory matrix with binary "1"s and exposing it to light, the areas with higher illumination will lose their charge and areas with little or no illumination will retain their charge. If this illumination happens to be an image projected onto the array by a lens you would now have a binary image stored in the chip that the computer could read.

This is exactly what we are doing. Our program first writes a binary "1" to all the memory cells, waits, then reads back the information and displays it on the monitor. Any cell whose charge fell below a certain threshold would be read as a binary "0". The binary "0"s would denote areas of high illumination. These cells

would be displayed as a white pixel on the monitor. The binary "1"s show areas of little or no illumination, would be displayed as black pixels.

Matrix Unscramble

With all our program has to do, addressing, writing to then reading from the individual cells and displaying the information, there is one more task it has to accomplish for us. Our dynamic camera chip began its life as a memory chip for computers not as a light imaging component. Therefore the matrix of memory cells do not lie in order. Our program must also unscramble the matrix and put it in order so that we can process images from it. Although that in itself isn't too much of a problem, it does decrease the overall speed of the program.

Limitations of the System

As stated before, we are not using any support circuits for our camera. This keeps our unit inexpensive and simple but it does impose limitations. The most important limiting factor is speed. The microprocessor in our computer operates at approximately a million clock cycles a second. A millionth of a second is equal to one micro-second. Depending upon the instruction the computer is executing it will usually take a couple of clock cycles per instruction in machine language to complete.

The dynamic RAM chip operates in nano-seconds, billionth of a second. The chip is also very critical about timing. Naturally with our computer operating in micro-seconds and doing all the work, some of the data can become corrupted. This corruption takes the form of image resolution degradation and unstableness. Of course we will attempt to keep this to a minimum.

Next Month

Next month we will get our hands dirty putting the camera together. We will go through lens type and selection for the camera. I'm still trying various lenses to find one that gives the best overall performance. In the meantime you may want to order a catalogue from Edmund Scientific where we will be purchasing the lens. There will also be some screen photos from the camera so you can see the resolution of the system. If you should decide to purchase the camera chip in preparation, please note that the chip will be shipped in a plastic electrostatic sheath. Do not remove the chip until you are ready to use it. This chip is sensitive to electrostatic discharge, and you could ruin the chip by handling it. If you should remove the chip put it in electro-conductive foam (sold at Radio Shack), or place in on aluminum foil. The idea is to try to keep all pins at the same potential either in the foam or resting on the foil, to keep it safe from static. Best yet, leave it in the package till you're ready to use it.

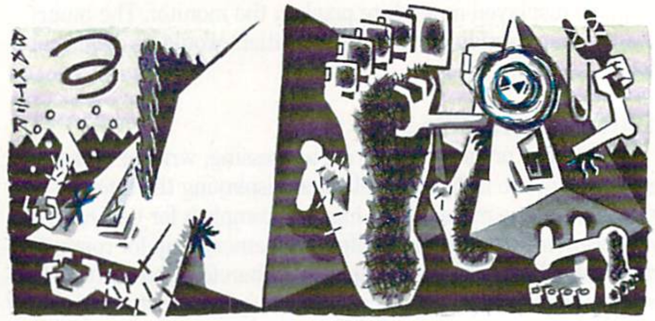
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by Richard Curcio

Small DOS

For the Commodore 64 or VIC-20 and any disk drive.


ART BAXTER

Small DOS

Why would anyone want or need a new disk wedge for the 64? After all, DOS 5.1 is provided on the Test/Demo disk which comes with the 1541 or 1571 disk drive. Unfortunately, large machine language programs such as sprite designers, character editors, high-resolution animation and window utilities very often intrude into the memory area normally occupied by DOS 5.1. Knowing how tedious disk access can be without the wedge, especially during program development, I sought a solution to this conflict. If you possess the Test/Demo disk you already have part of the solution.

Quick Method

Turn on your 64 or 128 in 64 mode. Load and run the 64 Wedge if you wish, but do not run any program that raises the beginning of BASIC program space. From the Test/Demo disk load "VIC-20 WEDGE". If you type LIST, you will see a short BASIC program. What you do not see is the machine language attached to the end of the BASIC portion. When the program was originally saved, the end of the program pointer was set artificially high to include the ML. As a result the BASIC and ML load all at once. Such programs are sometimes called "hybrids." Make no changes to the BASIC program.

In direct mode, perform the following pokes:

POKE 2582, 164:POKE 2687, 22:POKE 2693, 22
POKE 2778, 189:POKE 2847, 123:POKE 2848, 227

These pokes modify the VIC wedge to run on a 64 but don't run it yet. Save the program to disk with the name "QD64". If DOS 5.1 is working, disable it with the "Quit" command, @Q. If you now type RUN, the modified wedge will be installed at the top of BASIC memory and the screen displays the commands that are available. Several commands of DOS 5.1 are missing, notably SAVE (back-arrow) and LOAD & RUN (↑). This is not too serious as you can still use the normal SAVE command. To load and run in one step, type LOAD "program name", 8 and instead of pressing RETURN, type a colon(:) and press SHIFT and RUN/STOP together. The computer will print LOAD after the colon, a carriage return, the SEARCHING FOR... and LOADING messages, and the program will run when the load is completed.

However, this wedge also lacks a non-relocating load (%), supports only one drive (no @#n), and cannot easily be disabled (no @Q). You could deactivate the wedge with SYS58303. This restores the CHRGET routine to its original condition and resets the top of memory pointers. To regain the wedge, you would have to load and run QD64 all over again as there is no SYS available to re-enable it.

The New Wedge

To implement the missing commands on the new wedge, it will be necessary to add more machine language to QD64. The steps to accomplish this are fairly involved but once done, the result is a disk wedge for the 64 with nearly all the commands of DOS 5.1. Small DOS is half the size of DOS 5.1 (hence the name), can be located nearly anywhere in RAM, and will load and run like a BASIC program. A VIC-20 version with these features is also possible.

To begin, on the 64 type in and save Program 1. VIC users should first install any size memory expander and enter Program 1 with the modified lines listed in Program 2. Next, type in Program 3. This will be the BASIC portion of the hybrid we will create later. Program 3 is the same for the 64 and VIC-20 except for line 505, which VIC users should change as follows:

505 IF DS<1024 OR DS>32256 AND DS<40960 OR DS>48640 THEN PRINT"ILLEGAL ADDRESS":END

Save Program 3 with the name "TEMP.BAS".

Turn off and on your computer to reset it. VIC-20 users should load and run the VIC wedge. 64 users should run QD64 created earlier. In direct mode type PRINT PEEK(55) ;PEEK(56) and write down the two numbers the computer prints. Enter SYS 58303 on the 64, or SYS 58308 on the VIC-20. This disables the wedge as described earlier. Ignore the SYNTAX ERROR that results and immediately POKE the two numbers obtained earlier back into locations 55 and 56, followed by CLR. Load and run Program 1. The program peeks the top of memory to be sure that the wedge is in memory. It then peeks CHRGET to be certain that the wedge is disabled. The wedge cannot be modified while it is active. The top of memory is again lowered to accommodate the extra ML that is poked in just below the wedge. The program performs several checksums on the data statements and the resulting ML. If all is correct, the program then saves the machine language with the name "SD.ML". You may change the name by changing the variable N$ in line 308.

The Hybrid

One of the commands that Commodore disk drives respond to is COPY. Its form is "C:new file=old file". This creates a copy of a file on a disk with a new name on the same disk. A little known use for this command is to combine or concatenate files. It is mainly used for SEQuential and other data files but can also be used for PRG (program,) files. With the disk containing both SD.ML and TEMP.BAS in the drive, type OPEN 15,8,15, "C:SDOS64=TEMP.BAS,SD.ML":CLOSE 15 <RETURN>. The two old names should be the names of the programs saved previously, separated by a comma. VIC users should substitute SDOS/V for the new filename. A new PRG file will be written on the disk combining the BASIC program "TEMP.BAS" with the ML program "SD.ML". The files are combined in the order in which they appear after the "equal" sign. Up to four files can be combined in this manner but this is not an APPEND command. This method cannot be used to combine BASIC programs, though further investigation may reveal other uses.

Once again turn off and on your computer. Load SDOS64 or

SDOS/V just as if it were a BASIC program, which it partially is. When run, the program asks if the wedge is to be installed at the top of memory. Pressing "Y" causes the program to SYS to the address represented by the variable CA. The machine language at this point lowers the top of memory pointer by 512 bytes, and moves the main machine language into the space created. Typing any letter other than "Y" results in the program asking "WHERE?". Enter the address at which you want Small DOS installed. The program performs a limited check of whether the address selected is a valid location and will not allow Small DOS to be placed in an area occupied by ROM or I/O (input/output). The values in line 505 of program 3 represent all RAM with sufficient space to hold Small DOS (512 bytes). Some locations may require that the screen first be moved to some other location or the start of BASIC raised. On the VIC, be certain that RAM is installed at the address selected. The program will perform the appropriate SYS to install the wedge, without lowering the top of memory pointer, and print the range of memory it occupies. The program NEWs itself and uses the "dynamic keyboard" method to press RETURN on a SYS statement to enable Small DOS. Make a note of the SYS address so that Small DOS can be re-enabled after disabling it with @Q.

The following is a summary of Small DOS commands. All commands work in direct mode only.

Directory	@$
Display drive status	@
Send command	@command
Examples:	@S:filename(scratches a file)
	@R:new name + oldname(renames a file)
Load BASIC program	/program name
Load a binary file	%program name
Save a BASIC program	(back-arrow)program name
Change default drive	@#n where n = 8 or 9
Disable Small DOS	@Q

As you can see, Small DOS uses the same syntax as DOS 5.1 and only the Load & Run (↑) command is missing. The greater-than symbol (>) is no longer interchangeable with @. Wild cards and pattern matching are permitted. Pressing the space bar pauses and continues the directory listing, and RUN/STOP terminates it. When Small DOS is first enabled, the commands are directed to drive 8. This can be changed with the command @9. Only drives 8 or 9 are permitted. Attempting to load a BASIC program not on the disk will result in the BASIC error message, LOAD ERROR. The drives' busy light will be flashing and typing <RETURN> will display the DOS message FILE NOT FOUND. Errors during a binary load (%) will automatically read the drive status and print the error message. SAVE (back-arrow) always displays the drive status.

Compatibility and Precautions

Like DOS 5.1 and the VIC wedge, Small DOS "wedges" itself into the CHRGET routine and intercepts the special characters that begin each wedge command. This is an aspect of compatibility in addition to the actual memory locations that programs occupy. Small DOS has been tested and found to be compatible with a number of programs which also modify CHRGET to recognize new commands. As long as modifications are made at different locations, two wedges can function together. Small DOS alters CHRGET at a different point than DOS 5.1 would. From this we can infer that any wedge that cannot co-exist with DOS 5.1 due to modification of CHRGET will probably function with Small DOS. If your computer doesn't "lock-up" when Small DOS and another wedge are enabled, the two programs are probably compatible. If you have any doubts, experiment with an unimportant disk. Programs cannot harm your computer, but files on disk can be lost, usually forever.

Because of the VIC-20's varying memory size, the VIC wedge, on which Small DOS is based, is designed to locate itself to the top of memory — wherever that may be. This makes the new wedge completely relocateable. On a VIC-20, in addition to the top of memory, Small DOS can be located in RAM installed in the 8K space at Block 5. Or, if 8K is added to BASIC and a 3K expander is also installed, Small DOS can be placed in the 3K without any loss of BASIC program space. Small DOS will operate on an unexpanded VIC, but BASIC will lose 512 bytes. Small DOS can be placed anywhere in RAM on a 64. Note that some machine language programs should be installed before installing Small DOS at the top of memory. Likewise, Small DOS should be disabled before installing a program that will overwrite it.

Unlike the BASIC portion of the original VIC-20 wedge, which determines the proper SYS address by calculating from the start of the program, Small DOS finds the appropriate address by subtracting the length of the ML from the end of program pointer (line 100 in Program 3). This simplifies matters if you want to customize the BASIC portion. For example, if you always want Small DOS installed at the top of memory, lines 100, 140, 400, 410, and 415 of Program 3 are all that are needed. Or, if you want to display the commands that are available, PRINT statements can be added between lines 140 and 400. However, any changes must be made before combining the BASIC and ML programs. Editing the BASIC program after the ML has been attached to it will corrupt the ML. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

Program 1

```
5 REM --- SMALL DOS GENERATOR ---'BXMJ
6 REM --- C-64 VERSION ---'BRGI
10 TB=PEEK(55)+256*PEEK(56)
   :NT=TB-333'HVHG
12 IF PEEK(TB+1)<>230 THEN
   PRINT"WEDGE NOT IN MEMORY":END'IJML
13 IF PEEK(115)=76 THEN PRINT"WEDGE
   STILL ACTIVE":END'GICK
14 NH=INT(NT/256):NL=NT-256*NH'GTKJ
15 REM --- MAKE SPACE FOR ADDED ML
   ---'BAXI
16 POKE 51,NL:POKE 52,NH:POKE 55,NL
   :POKE 56,NH'EXMK
100 S=NT:T1=0:SE=1'DLCY
102 PRINT"CHECKING DATA
    STATEMENTS..."'BARE
105 READ D:IF D=-1 THEN 120'FHFE
110 POKE S,D:S=S+1:T1=T1+D
    :GOTO 105'GREE
120 IF T1<>8905 THEN 500'EJIB
130 S=NT+128:T2=0:SE=2'EORE
135 READ D:IF D=-1 THEN 145'FHMH
140 POKE S,D:S=S+1:T2=T2+D
    :GOTO 135'GRJH
```

Continued on pg. 114

by Robert C. Kodadek

Instant Term

A mini-terminal program for the Commodore 64

While computing, have you ever answered the telephone only to hear the familiar sound of a computer modem? If you have a modem, and use it, sooner or later the word will get out. With only seconds to act, you search frantically for your terminal software. After finally getting your terminal operating, you realize that not only has the caller hung up, but in your haste the program or job you were originally working on was lost. Some might say that the answer to this problem would be to buy a "multitasking" computer. An expensive solution to say the very least. As you've already surmised, however, there is another solution. Fortunately, it costs much less. In fact, it's free.

The accompanying program, Instant Term, is a machine language mini-terminal program for the Commodore 64. It is interrupt-driven, RAM resident, and transparent to your other programs. It waits silently in the background and is accessed by a single keystroke from either the direct or program mode. It may even be used while running another program that uses alternate or hi-res screens and sprites. After your communication is done, the program will return you to wherever you left off.

Using The Program

Type in and save the BASIC loader program. When you run this program, it will poke the machine language into free RAM at 49152 ($C000) and redirect the hardware interrupt vector to point to a new IRQ routine. Instant Term remains in memory, waiting to be called upon for instant telecommunications. In order to enter the terminal from either program or direct mode, press the CTRL-A key.

Upon entering the terminal, you will be presented with a menu screen showing the default system parameters. These are: 300 baud, an 8-bit word length, 1-stop bit,



ART BAXTER

full duplex, and no parity. You will be asked to, "Accept these presets? (Y or N)". Selecting the default parameters will place you directly into the terminal mode, otherwise you will be offered optional settings for each parameter. The parameters and options are:

1. **Baud rate** - 300 or 1200
2. **Word length** - 7 or 8 data bits
3. **Stop bits** - 1 or 2
4. **Duplex** - full/half
5. **Parity** - off, odd, even, mark, space

The popular full-duplex protocol specifies that characters typed on the keyboard are transmitted and then echoed back to the screen by the host computer. Half-duplex allows characters to be printed directly to the screen from your keyboard. While in the terminal mode, the F3 key will toggle the duplex setting and the F5 key will return you to the menu. You may clear the screen by pressing the shifted CLR/HOME key. Pressing the F7 key from the menu will return control to BASIC and/or the program on hold.

This terminal program transmits all standard ASCII character and control codes. The control codes 1 to 27 may be sent by holding down the CTRL key and pressing the equivalent character keys, A to Z. For example, CompuServe requires a CTRL-C, or chr$(3), for sign-on. The XON/XOFF protocol that is used to temporarily suspend character transmission uses CTRL-Q, chr$(17), and CTRL-S, chr$(18), respectively. XOFF tells the host computer to stop sending information and XON tells it to resume. Another code that is used frequently is ESCAPE, or chr$(27), which is generated by the CTRL and semicolon keys. All received characters are validated and then converted into Commodore ASCII and sent to the screen.

The new interrupt routine can be deactivated with the RUN/STOP and RESTORE keys and started with a SYS 49152. The phrase, "INSTANT TERM!" is printed on the screen each time the routine is reactivated.

About the Program

Instant Term resides in free RAM from $C000 to $C725. A new IRQ routine looks for the CTRL and "A" keys to be pressed simultaneously. When this combination occurs, the program turns off any sprites and stores zero page, color RAM, and all pertinent details of the current operating environment under the BASIC ROM at $A400. The BASIC ROM chip is switched out, the video chip is switched to bank 2, and screen RAM is relocated to an alternate screen location at 40960 ($A000). After opening the RS-232 channel, both of the Kernal buffers are relocated to a position under the BASIC ROM at $A900-$AAFF, allowing your programs to use all of BASIC RAM. The ASCII and CBM character translations are handled very easily with two 256 byte tables, one for receive and one for transmit. After leaving the terminal, the operating environment is put back exactly the way it was. If a program was in progress, it will then continue without missing a byte.

Yes, there are computers, such as the Amiga, which can do more than one job at a time. However, in some situations the trusty 64 can do almost as well, by placing one job on hold and doing another. Perhaps the same way the human mind would do it; multitasking, one task at a time. Anyway, now that we have Instant Term I would like to ask, "Can we talk?" ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

Instant Term

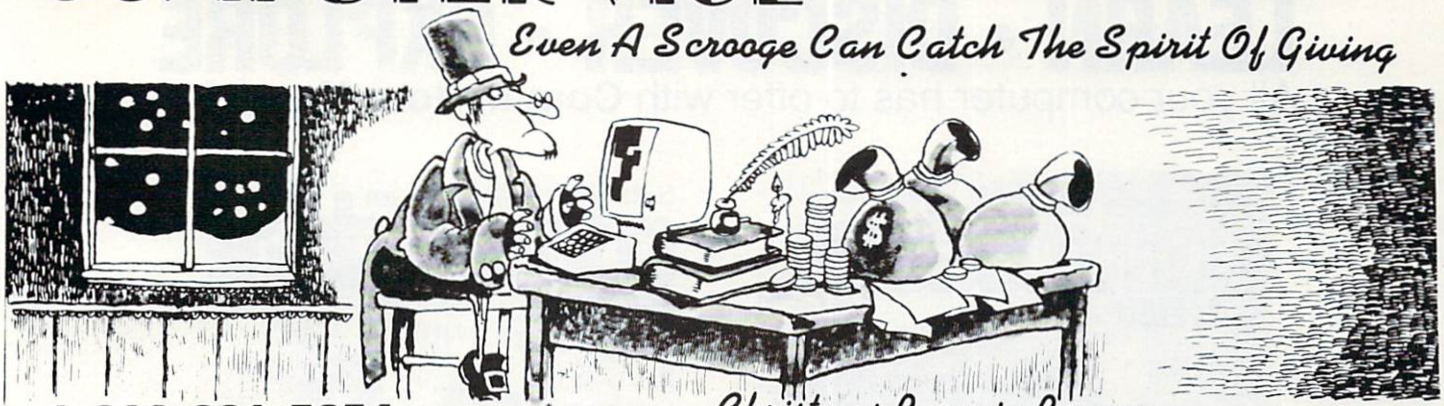
```
10 PRINT"READING DATA..."
   :PRINT SPC(51):ML=49152
   :FOR I=0 TO 1294'HTFJ
20 READ BY:IF BY>255 THEN
   PRINT"ERROR. LINE"1000+INT(I/16)
   :END'JSKK
25 POKE ML+I,BY:CK=CK+BY:NEXT'FORJ
30 IF CK<>140658 THEN PRINT"DATA
   ERROR!":END'GJGH
40 F=50469:T=50725:FOR I=0 TO 511
```

Continued on pg. 120

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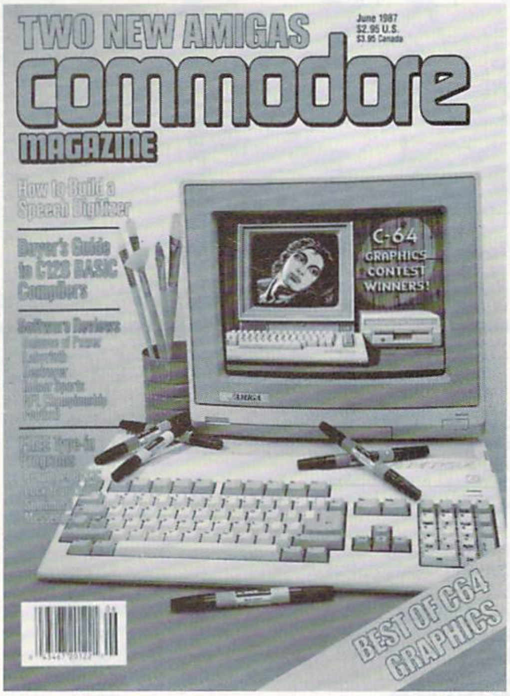
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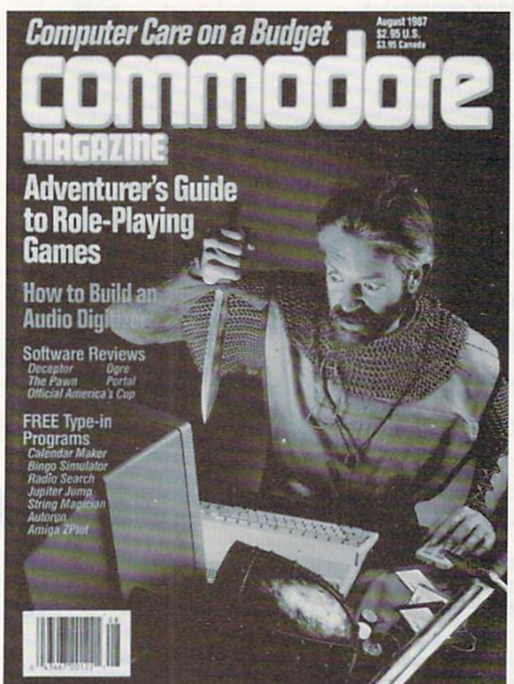
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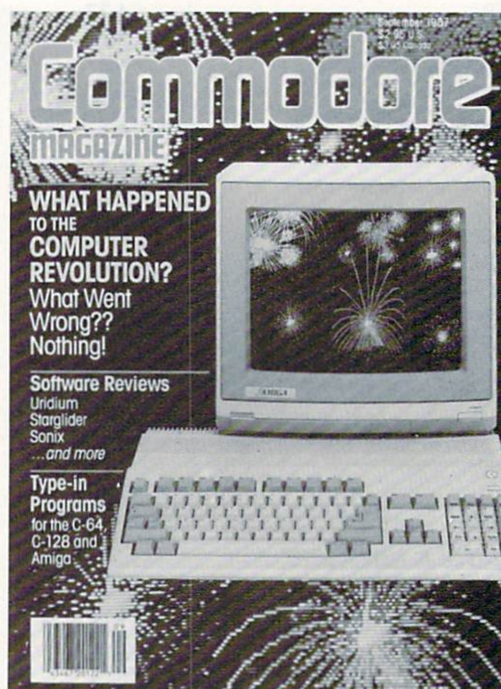
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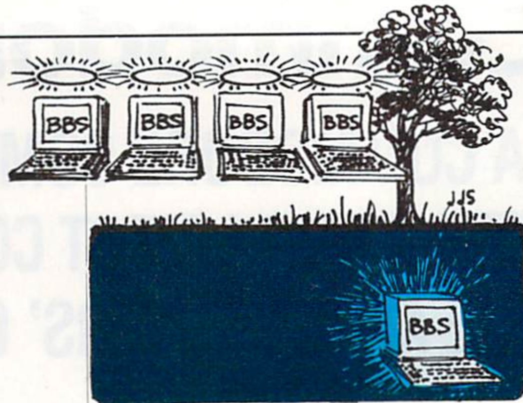
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by Herbert Swartz

The Law of Privacy and Computer Bulletin Boards

Walking the Constitutional Tightrope

Current legislation and pending bills are setting guidelines for BBS operators and users. Are they protecting us or skirting the First Amendment? Here's an inside look at this intriguing topic.



JOYCE SKIFFINGTON

Millstein and others place the number of "underground" bulletin boards at 20 percent, about 1,000 BBS's devoted to illegal purposes.

Attorney Julian Millstein of Brown, Raysman and Millstein in New York, editor of *Computer Law Strategist* explains, "The cycle is just about inevitable.

"First comes the new development in high tech, then the opportunities to commit crimes with that development and so the need for government regulation. But the regulation runs smack into ancient and traditional legal rights."

A typical illustration: computer bulletin boards (BBS's) and the law of privacy.

Attorney Charles McCoy, Jr., of Sheppard, Mullin, Richter & Hampton in Los Angeles, who has written and lectured widely on this collision course, poses it as follows:

"The proliferation and misuse of computer bulletin boards have made regulation necessary. Such regulation demands a delicate balance between existing governmental authority and ensuring the rights of computer bulletin operators and patrons. Ahead lies the challenge of walking that electronic and constitutional tightrope."

To appreciate the background to "walking the tightrope," consider:

Experts estimate the existence today of at least 5,000 BBS's, transmitting data on issues that range from cycling to cooking, from parapsychology to politics. With a home computer, a modem, and a telephone, anyone can dial and connect to a BBS, and either access information or leave messages — all for the mere price of a phone call.

In turn, the potential for abuse is enormous. Millstein and others place the number of "underground" bulletin boards at 20 percent, about 1,000 BBS's devoted to illegal (or at least unsavory) purposes.

As well, the tools of the thief or criminal have changed. Instead of the proverbial wire, glass cutter, bolt breaker, or lock pick, all he needs is a home computer, modem, and telephone. McCoy notes ironically : "A criminal can sit in the privacy of his home or office and go to work just like any business executive or administrative assistant."

The difference in such "work," though, is that the criminal's occupation involves gaining access to stolen credit card files, or facilitating the distribution of pornographic materials, or even performing "cloak and dagger" industrial espionage through the reading of private corporate computer files. Moreover, the criminal also has the capability to alter the information contained in any of these files.

Another form of mischief is known as "phreaking" —providing access codes to computer systems or stolen credit-card numbers. Still another features "sex talk," or child molesters exchanging information about their victims. Add in the capacity to enter illegal or inaccurate information into "above-ground" BBS's, and the setting for governmental regulation has been squarely posed. Enter Congress.

Senator Paul Trible of Virginia has proposed a bill that would extend criminal liability to any individual who knowingly transports in interstate or foreign commerce "any obscene, lewd, lascivious, or filthy writing, description, picture or other matter entered, stored, or transmitted by or in a computer."

Criminal liability in the bill would extend also to whoever "knowingly owns, offers, provides, or operates any computer program or system or service" with reasonable cause to believe obscene material is being transmitted; and to the use of computer networks for sexual exploitation of children.

Legislation has already been passed (the Computer Fraud and Abuse Act) which makes it a felony for BBS operators to list passwords to computer systems.

But what about the First Amendment — the law of privacy in the right to say and to hear whatever a person wishes?

As McCoy offers, "the imposition of criminal liability would chill the speech of BBS operators who might choose not to run their bulletin boards because their systems might contain undetected illicit matter. Those continuing their operations would assume the additional responsibility of scrutinizing all information within their systems. This is already a substantial burden for some operators. The freedoms of BBS users would likewise be restricted because their messages would inevitably be censored thus impairing the free flow of information."

Further problems arise as one recognizes that the freedom of privacy does not appear in the Constitution; the law of privacy is a creature of the Supreme Court — growing out of the right to have an abortion, to use birth control devices, or to read pornography in one's living room. The home, in short, is the key — off-limits to the intrusive arm of government. And no less off-limits when using a computer at home. Any regulation of such home computer use, opponents to legislation say, is "Orwellian."

However, though a man's home be his private legal castle for reading and writing, the computer *does* pose a different problem. Printed material comes to rest in the home. But information in a BBS is in the process of electronic transmission when it is accessed or sent out. Unlike printed material in the home, electronic material enters the stream of commerce.

And thus the tightrope. For the Consti-

Continued on pg. 123



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by Jim Gracely

Amiga 500 A-Z

The Amiga 500 is a hard machine to describe in words. It's really a machine that you need to watch to appreciate. Regardless, we've tried to provide an overview of this exciting new computer. And what better way than an Amiga 500 A-Z.

A

Amiga 500

A home computer based on the 68000 microprocessor, running at 7.14 MHz. Standard features include 512K of RAM, a built-in 3.5-inch disk drive with an 880K formatted capacity, a full 96-key keyboard with numeric keypad and separate block power supply with ON/OFF switch. Bundled software includes Workbench, the graphical user interface and AmigaBASIC.

B

Books

To date there are over 25 Amiga-specific books listed in *Books In Print*. This is in addition to the many books published for the 68000 microprocessor and on the programming languages available for the Amiga. Some of these titles include *The AmigaDOS Manual* from Bantam Books, the series of Amiga reference manuals from Addison-Wesley and the *Programmer's Guide to the Amiga* from Sybex. Check your local library or book store for other titles.

C

CLI

In addition to Workbench, the graphical user interface, the Amiga also has a powerful Command Line Interpreter (CLI). The CLI accepts typed command lines and executes such commands as Format, Dir, List, Newcli and Echo. You can have multiple CLIs running and switch between them as you would any other window. Although most everything that can be done in the CLI can also be accomplished from Workbench, some commands allow extra options when used from the CLI.

D

Desktop Presentation

This is a new application name which includes any kind of presentation, or presentation materials that can be created on your computer. In addition to word processors, graphics packages and spreadsheets, desktop publishing and desktop video are important parts of desktop presentation. The Amiga 500 is a very capable desktop presentation computer with desktop publishing packages such as *PageSetter* from Gold Disk, *City Desk* from MicroSearch and *Publisher 1000* from Brown-Wagh and desktop video packages such as *DeluxeVideo* from Electronic Arts and *Aegis Animator* and *Videoscape 3-D* from Aegis.

E

Extras Disk

Along with the Workbench 1.2 disk included with the Amiga 500, you also get a disk called "Extras." This disk contains AmigaBASIC, and utilities for copying between 5.25-inch MS-DOS formatted disks and 3.5-inch AmigaDOS disks. In addition, a drawer called TOOLS contains a number of useful little programs. These include MicroEmacs (text editor), Fed (font editor), IconMerge for making joined icons and PM, a performance monitor.

F

Future

What lies ahead for the Amiga 500? Well, certainly much more software. Software publishers like Electronic Arts and Aegis Development Corporation are continuing to pump out software, in addition to many smaller companies. Hardware manufacturer's like C Ltd. have already announced products for the Amiga 500 such as an RGB Adaptor to convert RGB



CHARLES BARTHOLOMEW

analog signals to standard composite so you can use a 1702/1802/1902 monitor with the 500. Other products include a Small Computer Systems Interface (SCSI pronounced "skuzzy") adaptor, memory expansion modules and a Commodore 64 emulator.

Multitasking is the ability of the computer to run multiple programs (or tasks) simultaneously.

Graphics

The Amiga 500 is capable of truly stunning graphics, with 4096 colors and four graphics modes available. In the two low-resolution modes (320X200 and 320X400), any 32 colors out of the palette of 4096 are allowed. In the two high-resolution modes (640X200 and 640X400), any 16 colors are available out of the same palette of 4096 colors. Although the Commodore 64 also has 16 colors, the ability to pick which 16 colors you want to work with makes a big difference.

Hardware

Additional Amiga hardware for the Amiga 500 includes:

A2002-23	—	RGB Analog monitor (also supports RGBI digital and composite video)
A501	—	512K RAM expansion unit with battery-backed clock/calendar
A1010	—	External 3.5-inch drive
A1020	—	External 5.25-inch drive (with transformer)
A1680	—	300/1200-baud modem

IFF

The Amiga family of computers is unique in that they have adopted a standard format for storing files. Regardless if the file is text, graphics, or music, almost any Amiga package is capable of using files from any other package. This means that no fancy conversion programs are necessary if you want to give a friend with *Aegis Images* a painting you've done with *DeluxePaint.*

Joysticks

While the mouse is an excellent input device, some games just require a joystick to provide the right feel and excitement. The Amiga 500 has two mouse/joystick ports, and as long as the game allows a joystick, any Commodore-compatible joystick works just fine.

Keyboard

The Amiga 500 sports a full 96-key integral keyboard as part of the basic package. The keyboard has an IBM PC/XT style layout for the main keyboard and numeric keypad. In addition, there are 10 function keys and an inverted "T" style cursor pad.

Languages

What's your choice? BASIC, Pascal, or C? These are just three of the many languages available on the Amiga 500. AmigaBASIC by Microsoft is bundled with the computer and is a very powerful implementation. Need more? Then True BASIC and ABasiC fit the bill. Speed? A/C BASIC is a BASIC compiler for speeding up your programs. C is available from two sources as is Modula-2 and Fortran. UCSD Pascal, LISP and machine language are all also available.

Multitasking

Although this is a hard concept to understand, you can rest assured that the Amiga family of computers are the only personal computers that provide true multitasking capabilities. Multitasking is the ability of the computer to run multiple programs (or tasks) simultaneously. The net result is that you can have a terminal package, a word processor and a spreadsheet all in memory and all running at the same time.

News

Each month *Commodore Magazine* provides news on the latest hardware and software for the Amiga 500. It's right at the beginning of each issue where it's easy to find. Be sure to check it this month for news of the Amiga 500 Video Test Flight program.

Operating System

The Amiga 500 operating system is called AmigaDOS. This is the language that is used when talking to the computer and giving instructions such as FORMAT (a new disk) and DIR (directory) to the disk drives. AmigaDOS supports many nice commands such as INFO for checking the available space on all disks currently mounted. Commands such as DIR and LIST are available with a whole range of options and pattern matching commands for getting just about any combination of files and file information you could want.

Public Domain

The whole family of Amiga computers has an ever-increasing and very diverse quantity of public domain programs available. These are programs written by Amiga users and developers that they have decided to give away. They are fully functional, often quite useful programs free for the cost of a disk. Two popular series of disks are called the Fred Fish disks and the Amicus disks. The Fish series is up to disk number 88 (that's 88 880K disks full of programs or 77 megabytes of programs or about 455 1541 disks full). The Amicus series adds another 23 disks to that total.

To date there are over 25 Amiga specific books listed in *Books In Print.*

Quality Control

Each Amiga is tested at Commodore before being boxed and sent from the plant. The procedure itself includes tests and checks of all the RAM and ROM, graphics modes, sound and speech capabilities, disk drive access, multitasking capabilities and mouse and keyboard operation. If any given test fails, the computer is completely disassembled and the offending component repaired. According to the Quality Assurance department of Commodore, more than 50% of the total assembly time is spent in testing.

ROM

The Amiga 500 has 192K of ROM with Kickstart 1.2 built-in. To new Amiga owners, this may not mean much, but to those Amiga 1000 owners who are used to having to load two disks each time they power-up, this is a benefit. To start up the computer, you simply turn it on and insert the Workbench disk into the drive. That's all there is to it. This is especially important in applications such as security and environment monitoring where the computer must reset itself and reload software after a power failure.

Software

There are currently well over 500 software packages that run on the Amiga 500. From Activision's *Music Studio* to Zirkonics *P.T.E.*, the software keeps coming. In productivity, there are more than half a dozen each of wordprocessors, desktop publishing packages, data bases and spreadsheets, including impressive packages like *WordPerfect, Professional Page, SuperBase* and *Maxi-Plan 500.* In entertainment, packages like *Marble Madness, The Pawn, Sinbad and the Throne of the Falcon* and *Starglider* are advancing the levels of arcade action, graphics and

sound. In graphics, the Amiga computers are superior. From advanced painting packages like *DeluxePaint II*, to solid-modeling packages like *Sculpt-3d* to special effects graphics packages like *E/FX*. Sound and music packages include sound digitizers like *Sound Sampler*, music composition packages like *Sonix* and packages that let you use the Amiga as an instrument such as *Mouse Music*. Add all of the other miscellaneous application software and you have a good base of programs to choose from.

> Regardless if the file is text, graphics, or music, almost any Amiga package is capable of using files from any other package.

T — Tips and Tricks

In case you haven't noticed, *Commodore Magazine* has started a Tips & Tricks column specifically for the Amiga. Be sure to read this month's bag of tricks, and be sure to write if you have any of your own to add.

U — User Groups

Over 200 user groups are now supporting the Amiga computers. As usual, this is an excellent source of information and inspiration on every aspect of the computer. From public domain software, to demonstrations of new products, the user groups are where you want to go. To find out what user group supports the Amiga in your area, call Commodore customer support at (215)-436-4200.

V — Voice

The Amiga 500 is one of the few computers on the market that provides built-in speech capabilities (the other two computers are the Amiga 1000 and the Amiga 2000!). By using a simple command called SAY, you can get the 500 to speak anything you would like. Use it in your own programs, or listen to programs like *A-Talk* (telecommunications package) and *Talker* (word processor) speak the text you normally read. Many other software packages such a *Chessmaster 2000* are also using the built-in speech to enhance their applications.

W — Workbench

Workbench is the iconic interface that you can use to give instructions to the 500. Using the pull-down menus and the mouse, you can get the 500 to show you the contents of disks, format new disks, copy files, and load and run programs. Although many people eventually progress to using the CLI (command line interpreter), you can easily accomplish all of your work form the Workbench. Packages like *CLImate* help make it even easier for Workbench users to access some of the commands of the CLI.

X — Expansion Memory

(Close enough isn't it?)

The Amiga 500 can be expanded to a total of 9Mbytes of contiguous memory. This means that there is no "bank switching" or "extended memory" manipulations necessary. If you wish to write an 8Mbyte AmigaBASIC program, go right ahead (don't bother submitting it to the magazine - it's too long!). Of course, the Amiga 500 comes with 512K of RAM. The A501 memory expansion adds 512K for a total of 1Mbyte. The A501 also adds a battery-backed clock/calendar feature. The other 8Mbytes of RAM would be added on the expansion port on the left-hand side of the computer.

Y — Youngsters

The Amiga 500 makes a very nice computer for children of all ages. Studies have shown that graphical computer environments, such as the Workbench interface, are very quickly learned by children. In fact, the association of symbols and images with their purposes is almost intuitive. The educational software being released for the Amiga 500 is also excellent. MicroIllusion's *Discovery Math* and *Discovery Algebra* are just two such packages, along with the *Talking Coloring Book* and the whole series of programs from First Byte.

> By using a simple command called SAY, you can get the 500 to speak anything you would like.

Z — Zero-Hour

This is what it is if you want to get an Amiga 500 for Christmas. ■

A Word From Our Sponsors

Who is going to buy an Amiga 500? What are Commodore's plans for this product? Where will it be positioned in the marketplace? I found the answer to some of these questions when I spoke recently with Alfred Duncan, General Manager, Commodore Business Machines and Richard McIntyre, Senior Vice-President of Sales and Marketing for Commodore Business Machines.

Who will buy an Amiga 500? According to Mr. McIntyre, it is most likely a first time computer user. He also sees an upgrade market for current 64 and 128 owners, once the ability to transfer files from the 64 and 128 to the Amiga 500 becomes available.

Where will the Amiga 500 be positioned in the marketplace? The 500 is being billed as the "Ultimate Home Computer." This doesn't quite tell the whole story, however. According to Mr. Duncan, "the Amiga 500 will provide the full range of applications traditionally sought by home users including word processing, productivity, recreation and telecommunications. Additionally, the 500 will provide access to many applications not traditionally thought of with an affordably priced computer. These include presentation graphics, desktop publishing, desktop design, and desktop video." Mr. McIntyre feels that for the first time, you have a computer where the "hardware is transparent. It is a vehicle by which the user can utilize the applications packages available." Because of this, he says that Commodore must "position applications the user can use."

What are the hopes for the Amiga 500? Mr. McIntyre felt that the potential is there for the Amiga 500 to become the lead product for the company - once the quantity and quality of the software products matches what is available for the 64. More immediately, his prediction is that the Amiga 500 will "far outsell the Amiga 1000, because it is the benefactor of all the Amiga 1000 groundwork." The initial sales figures are supporting this comment, with the announcement at Siggraph that the initial production run of the Amiga 500 was sold out within the first two weeks of product shipment. Mr. McIntyre stated that the initial sales are the most impressive since the launch of the Commodore 64.

In all, optimism does exist for a very big future for the Amiga 500. However, it is tempered by a recognition that Commodore must do its part. Mr. McIntyre stressed that "our [Commodore's] aim is to provide greater support to our products, the dealers who sell them and the end user." While this is certainly a weighty chore, it appears to be in able hands. ■

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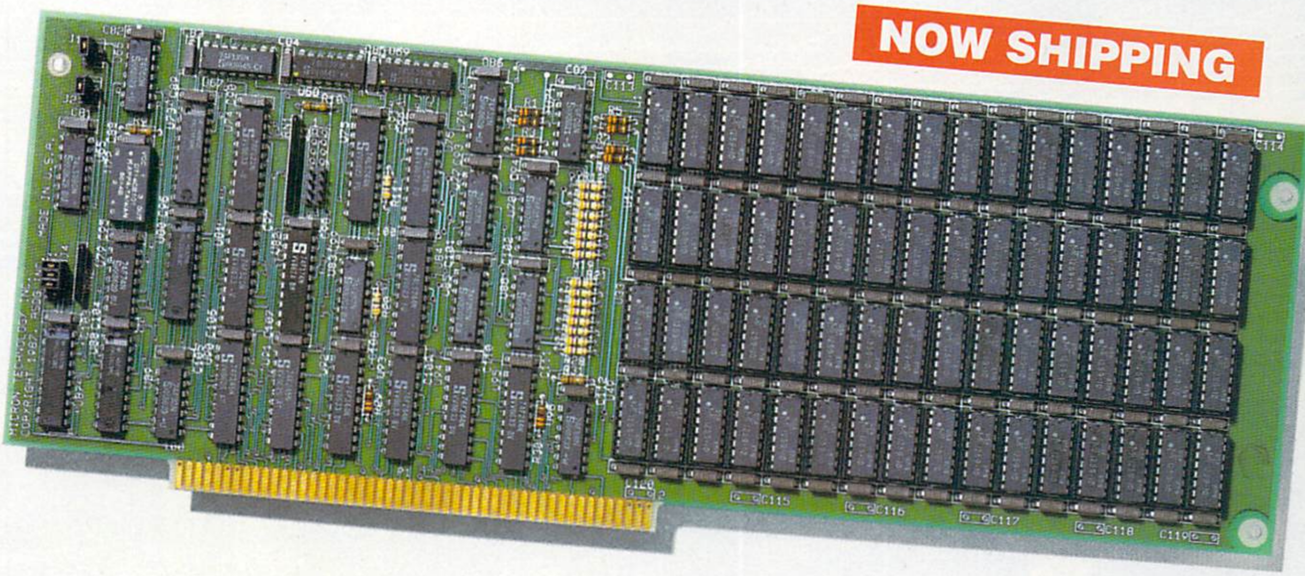
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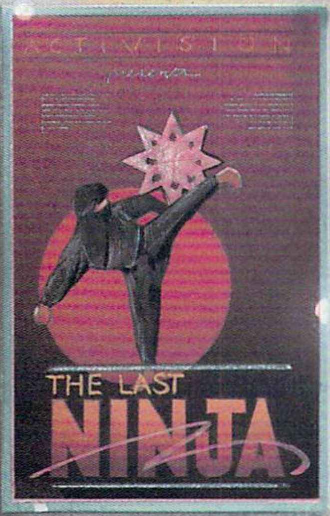
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COMING ATT

...WHAT LIES AHEAD FOR





Coming soon to a monitor screen near you: fun, excitement, action and adventure. Here are some of the top 64 and Amiga titles arriving in the near future. Each product mentioned here will be released sometime in the fall, unless a more accurate date is specified.

by John Jermaine

ACCOLADE

64/128: *Apollo 18: A Mission to The Moon* is an impressive recreation of the NASA glory days when Apollo space craft were landing on the moon regularly. You assume the roles of both mission control specialist and astronaut as you participate in eight activities. Your first task: lift-off safely from Cape Kennedy. Once you reach the void of space you fly the Apollo craft to the moon. The third task challenges you to achieve orbit around the moon and land the LEM (Lunar Excursion Module) on the Lunar surface. A moonwalk exercise has your astronaut examining the remains of an unmanned Ranger Moon probe, but once the job is done, the LEM lifts-off to rendezvous and dock with the orbiting command ship. During the trip home, your pilot has to don a space suit and repair an external component of the craft in the zero gravity environment of space. To wrap things up, the experienced NASA astronaut must carefully re-enter the earth's atmosphere, splashdown and be recovered. If you fail to complete any segment of this long assignment, the mission is terminated.

Mini-Putt is a new type of miniature golf program, combining elements of traditional mini-golf courses with comical computer animation. This one to four player game features the famous windmills, swings, loop-de-loops, etc., associated with the outdoor activity, but it also exhibits a central theme for each course (like popular movies, sports, etc.), and cute little animated creatures tend to pop up unexpectedly to interfere in the game.

If you enjoy driving software automobiles around a defined track, *Test Drive* will give you the challenge of your life. First of all you're racing against the clock instead of other drivers. Secondly the program accurately simulates the characteristics of five international high performance cars, ranging from the chic Porsche 911

Continued on pg. 116

ACTIVISION

Amiga: Steve Cartwright has been a busy man over the last several years. He has enticed us with two *Hacker* game challenges, drafted consumers into the Colonial Marines for *Aliens*, and now he is signing us up to compete in an air race later this Fall. The working title of the project is *Air Rally*, and it's similar in many respects to being a *Pole Position* or *Out Run* game of the air. Basically the pilot flies an antique aircraft around a unique rural course. The Amiga graphics for this project are being handled by Mike Nowak, a new member of their development staff. Mike was the protege and student of Jim Sachs, famous for the incredible graphics in *Saucer Attack* and the recently released *Defender of The Crown*. Don't be surprised to hear more about this talented individual during the coming year.

64/128: Activision is once again preparing to prove that all computer software is not created equal. In September, for example, *The Last Ninja* will be shipped to computer stores around the country. The program is an action packed strat-

TRACTIONS!

C-64 AND AMIGA OWNERS

egy game where the player uses karate moves to vanquish his foes. There are six different environments or themes in the game. It has 130 screens of 3D color graphics, 12 different sound tracks and over a thousand animated moving objects.

Another new Activision release is a graphic adventure rescue mission created by the entertainment experts at Lucasfilm Games. *Maniac Mansion* is an unusual mystery story which begins almost twenty years ago. In those days, Dr. Fred was a prominent physician at the local hospital. Then, for some unknown reason, he and his wife, nurse Edna, quit their jobs at the hospital, took

Continued on pg. 116

Artworx

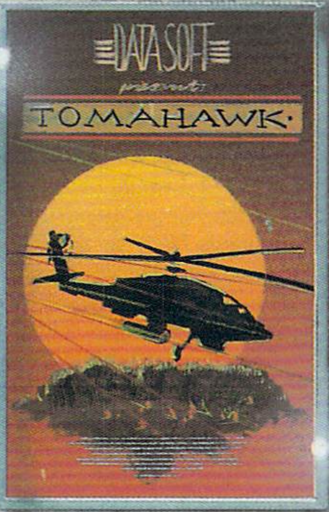
64/128: *Cycleknight*, a product advertised in their 1986 catalog, will finally be coming your way sometime this Fall. The game features a noble knight of the realm searching the kingdom for his kidnapped queen and some of her loyal subjects. His main tool in this quest is a fabulous Harley-Davidson motorcycle. This advanced piece of equipment provides transportation and carries an on-board computer, which automatically translates conversations between you and the creatures of the area. In other words, you can ask them questions, barter, etc. If you think about it, *Cycleknight* is a unique program because it delivers the action of an arcade game and certain aspects of role-playing are present, while the game accurately simulates many of the features found on conventional motorcycles.

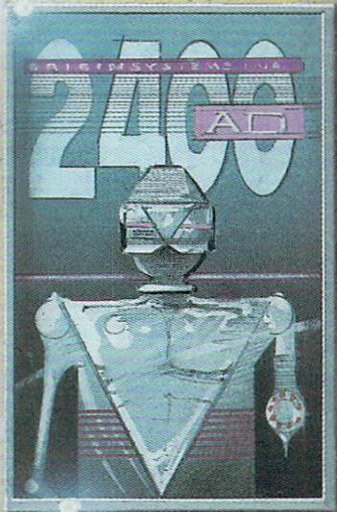
Artworx will also be releasing *Winter Events* and *International Events* this Fall, for the sports game enthusiast in the crowd. By the way, these English programs were not developed by the same team who wrote *Highland Games*. No further details are available. Two new Strip Poker data disks (#4 and #5 both contain female players) will also be coming your way during the third quarter of this year.

The Avalon Hill Game Company

64/128: October is the scheduled release date for *NBA*, the first statistical computer basketball game sanctioned by the National Basketball Association. Have you ever wanted to coach the top twenty basketball teams of all time? Now you will have that opportunity. The program also contains a statkeeper which calculates team statistics and individual performances, an animation feature which controls the actions of ten players simultaneously and three modes of play (solitaire, head-to-head and autoplay, where the same teams play several games in a row). I understand *NBA* accessory disks will also be coming your way later this year.

Diplomacy is based on the popular board game of the same title, which has been around for several years and won a number of awards. The object of the game is simple. Negotiate alliances with neighboring countries for your own protection. If a new deal would be to your advantage, double cross your associates and work out an arrangement with their enemies. *Diplomacy* takes place in pre-WWI Europe. It contains single and two player game options and presents a unique challenge where you have to take advantage of the present situation in order to survive. This nasty, dirty game of deception should be available for 64 users shortly before the end of the year. It would make a great Christmas gift for the politician on your list.





JESSE HULSE

Berkeley Softworks

64/128: *GeoPublish,* a new addition to the *GEOS* library of products, is more flexible than most of the competition. The software contains an internal drawing program, supports output to laser writers and provides all the major features found in more expensive IBM-PC and Macintosh desktop publishing software. This is a classic case of taking 16 bit technology and making it work in an 8 bit environment.

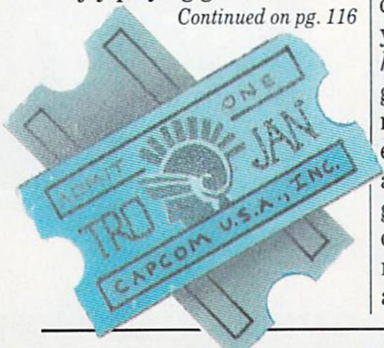
GeoProgrammer is an advanced assembler, linker and de-bugger package for generating *GEOS* oriented programming. It also allows you to create your own source files using *GeoWrite* and paste *GeoPaint* pictures directly into the code. If you're developing icons for use in a program, for example, your source document will actually display the icon image, instead of some crude representation of it.

Coming in 1988: Berkeley Softworks has made no announcements concerning new *GEOS* products being developed for release next year. James De Frisco, the Senior Product Manager at Berkeley, says they are seriously examining two possibilities: (1) several strategy and simulation game ideas which would push the capabilities of GEOS in a new direction, and (2) an advanced graphics generation package (similar in many respects to CAD-PAC software).

CAPCOM

64/128: I would like to introduce you to Capcom, a relatively new "Kid" on the software marketing block. Their current and future releases are direct translations of well known video arcade machines. In September, for example, *Trojan* will be introduced to computer game players everywhere. This action packed program has the user assuming the role of a futuristic knight, setting off on a one man crusade which may restore law and order to a decaying civilization. With sword and shield in hand, you battle each foe to the death, even though they try to rush you from both sides simultaneously. If you accidently lose your weapons during the heat of battle, you have to rely on your martial arts talent and skill. I enjoy playing games where

Continued on pg. 116



Electronic Arts

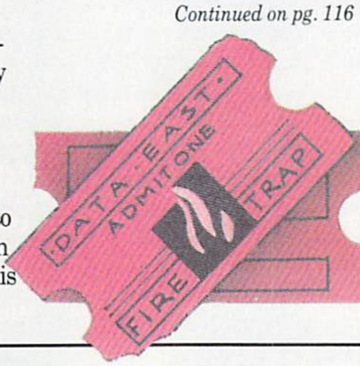
Amiga: Jon Freeman and Ann Westfall, two thirds of the *Archon* development team, are finishing up a project they began several years ago tentatively titled *Rainbow Road.* It traces the exploits of three courageous knights who are trying to solve a series of difficult problems. They begin their noble quest on the world of Albion, where magic has suddenly ceased to exist. Secondly the famous Rainbow Road, which used to go on infinitely, now connects only a limited number of worlds. Who or what is responsible for these phenomena? A special task materializes because of this new situation. You must find a way to return a visiting ambassador to his homeland, even though the

Continued on pg. 117

Data East

64/128: Data East, like Capcom, is another company marketing 64 conversions of many well known arcade game machines. The September list of releases includes: *Shackled, Fire Trap* and *Last Mission. Shackled* takes the player into the depths of a castle dungeon to rescue potential allies for his battle against the owners of that structure. Gather magical powers and additional strength as you fight your way to freedom. If you've seen *The Towering Inferno,* you know what you're up against in *Fire Trap.*

Continued on pg. 116



Datasoft

64/128: Move over *Gunship.* Another AH-64A Apache Helicopter simulation will be flying your way later this year. *Tomahawk* displays 3D ground graphics and carries an arsenal of weapons including rockets, guns, and laser-guided anti-armour missiles. The program also features several combat and training assignments, four pilot-rating levels, a night vision system and an instrument-only flying option for use when the weather is bad. Whether you are initiating a ground attack or participating in air-to-air combat, *Tomahawk* will definitely keep you on the edge of your seat. *Force Seven* is an action packed game set in the far distant future, where you become the commander of a special military task force. Each member of your team has been hand picked for this assignment because of his/her individual ex-

Continued on pg. 116

EPYX

64/128: September is a very special month for the fans of Epyx software. *The Omnicron Conspiracy,* the second title of their Masters collection, is a graphic adventure for the experienced sleuth in the group. It challenges you to solve a futuristic mystery where a starship and its entire crew simply vanished during a routine patrol. Was the disappearance an accident or something so sinister that someone is trying to cover-up every detail of the incident? Your assignment is to find out what really happened using sophisticated computer aids, a personal droid named Pal and well placed informants. *Street Sports Basketball,* another new product, is unlike any micro-computer basketball program on the market. The game is patterned after the kind of sport you

Continued on pg. 117

Firebird

64/128: Before we discuss new material coming out from Firebird, I thought you might like to hear some good news concerning one of their other titles. A deal has recently been inked with Bally-Sente to put *Starglider* on a video coin-op machine. I understand that an Amiga board will be used in the unit to give it optimum graphics and sound capabilities. Isn't it great that we, the micro-computer game playing community, may have contributed indirectly to that venture and definitely had the first opportunity to play the game? Getting back to the business at hand, Firebird plans to give the 64 owner a large selection of software to choose from during the rest of 1987 and extending into 1988. *Guild of Thieves,* the follow-up to *The Pawn,* is a full color graphic

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INFOCOM

64/128: *Plundered Hearts,* written by Amy Briggs, has the distinction of being both the first Infocom adventure game written by a woman and their first product where the main character is explicitly identified as female. Amy enjoys reading upper-class romantic novels, so it was a natural thing for her to write a 17th century pirate romance. As the story begins, you discover your father has apparently fallen into the clutches of an infamous Caribbean scoundrel. Hoping to locate and free him from this character, you set sail from England on a long perilous voyage to the West Indies. In conclusion, *Plundered Hearts* is an accurate historical adventure where anything and everything can happen.

Continued on pg. 118

MASTERTRONIC

Amiga: I want it clearly understood that a variety of 64 titles will be coming your way from Mastertronic later this year, but nothing has been officially announced. In terms of the Amiga, however, *Metropolis* should be hitting the shelves of your favorite computer store sometime during the holiday season. As the story opens, several highly classified tapes of information have been stolen and hidden somewhere in the city. It's your job to locate these lost tapes by gathering clues, questioning robots and paying close attention to the newscasts that appear on the screen periodically. By the way, the robots actually speak back to you using advanced speech synthesis. It's also interesting to note that the program itself has a working knowledge of 20,000 words (the above average person has a vocabulary of 30,000 words).

MICROPROSE

SIMULATION • SOFTWARE

Amiga: By the first of October, the Amiga version of *Gunship* should be making its debut. As you probably know by now, *Gunship* is an exciting realistic simulation of the AH-64A Apache gunship Helicopter. Keep an eye out for this item because the cockpit graphics have been completely re-written to take advantage of the 16 bit environment, and the enemy vehicles on the ground are more solid looking with a greater number of details.

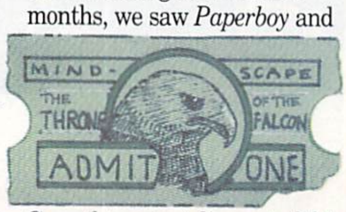
64/128: A new flight oriented product will be taxiing down the MicroProse runway late this Fall for Commodore pilots everywhere. The program is called *Project Stealth Fighter,* and it contains many of the exciting features already found in their classic *F-15 Strike Eagle*

Continued on pg. 118

MINDSCAPE INC

64/128: Two Cinemaware titles will be coming out later in the year. *The King of Chicago* takes place in the 1930's. Al Capone has just been sent up the river, and the windy city is up for grabs. Of course you still have to battle the legendary Capone mob for control of Chicago, but a little violence and intimidation goes a long way with them. Keep an eye on your gun moll, don't trust anyone, and use a well placed bribe now and then to further your cause. *Sinbad and The Throne of The Falcon* is an epic seafaring mystery where the hero uses his quick wit and sharp sword to solve most of his problems. Black magic, monsters, deadly foes and mysterious forces of darkness are waiting for you to confront them in this fast moving interactive fantasy.

Coming in 1988: Mindscape recently signed an agreement with the Atari Games Corporation of Milpitas (not to be confused with the Atari Corporation of Sunnyvale, CA), to develop and manufacture 64 translations of a number of their popular video coin-op machines. during the Summer months, we saw *Paperboy* and



Gauntlet materialize out of this arrangement. In the future, *Road Runner, Road Blasters, Gauntlet* 2 and *720* will also be available for 64 arcade game fanatics.

ORIGIN SYSTEMS INC.

Amiga: An expanded version of *Moebius,* featuring superior graphics and a mouse interface, will be available by September. For those of you who aren't familiar with the 64 version of the program, it's an oriental fantasy role-playing game.

64/128: Sound the trumpets. The long awaited *Ultima 5* role-playing game will be coming your way during the final months of 1987. Now I don't know the basic storyline of the program, but I can give your some interesting facts about the project. First of all, *Ultima 5* allows you to use characters generated in the previous Ultima game. Secondly the program contains a gigantic region to explore, more than twice the size of the mapped area found in *Ultima 4,* and 32 towns (containing multi-level buildings with cellars, attics, etc.) dot the countryside. Night and day are visually displayed in the game, while a 24-hour clock on the screen records the

Continued on pg. 119

SHAREDATA

64/128: If you're frustrated because you can't get on one of these television game shows, Sharedata offers the next best thing. In recent months Sharedata has released official micro-computer clones of several well known TV game shows. These titles include: *Wheel of Fortune, Family Feud* and *Jeopardy!* A selection of data disks containing questions covering specific themes and subject matter, is currently available for each program mentioned above. John Zentz, Chairman of the Board at Sharedata, estimates there will probably be two new data disks released each month for every game show program currently on the market. In fact, the Softie development team is also working on a special series of

Continued on pg. 119

subLOGIC Corporation

64/128: A lot of activity is going on behind closed doors at the Sublogic hanger these days. In September, you will be able to fly a *Stealth Mission* on your Commodore computer. The top secret aircraft in this simulation is very fast, well armed, and can't be detected by enemy radar. It might surprise you that *Stealth Mission* will be compatible with the present line of Sublogic Scenery Disks, and a special set of mission disks are also being developed for the product. These accessory diskettes contain different terrains and situations where the experienced pilot has to knock out enemy targets, while leaving civilian structures and friendly forces untouched. Speaking of Scenery Disks, Sublogic is developing a

Continued on pg. 119

As I finish gazing into the Commodore crystal ball, I can honestly say that 64 and Amiga software is alive and well and flourishing. ■

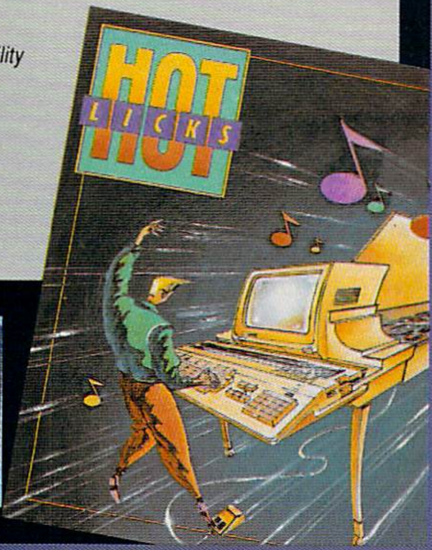
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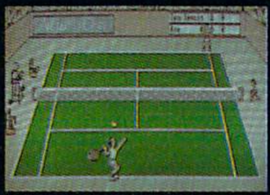


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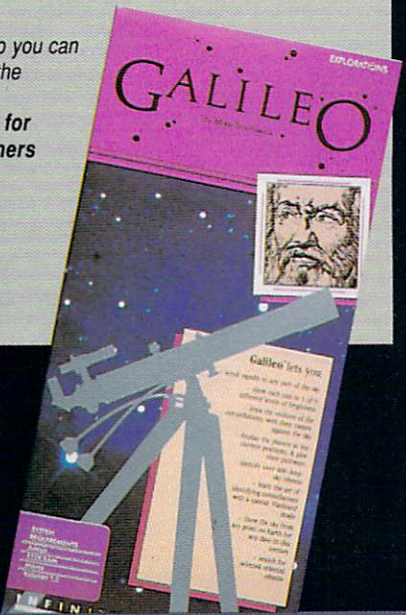


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by Dan Gutman

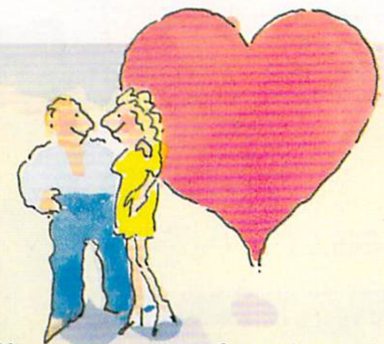
No, it's the opening screen on ParaNet, an electronic bulletin board system in Arizona that concentrates on UFOs, ghosts, ESP, astral projection, reincarnation, and other paranormal goings-on. Anyone with a personal computer and a modem can have a close encounter with it by dialing 602-837-0062.

Last year I wrote a book called *I Didn't Know You Could Do THAT With A Computer!* It was about "weirdware" — off-the-wall computer programs. You know what I mean — programs that hypnotize you, help you mix a drink, strange things like that. The really good stuff that we never hear about because the computer magazines would rather review the ten millionth new word processor on the market.

I thought I had dug up the weirdest, strangest, and goofiest things anybody would ever want to do with a computer. But I was wrong. If you really want weird, you have to dive headfirst into the amazing land of electronic bulletin board systems.

BBS's, they call 'em.

If you're not familiar with this strange subculture festering out there, we should explain what a BBS is. You know the cork bulletin boards they have in supermarkets? Yeah, the ones they put by the exit door so that if you stop to read it you get in everybody's way. Imagine a bulletin board you can read off the screen of your Commodore. Imagine that you can read a message on this board, even though the person who posted it is a thousand miles away. And imagine that you can post a message that people all over the country can read.



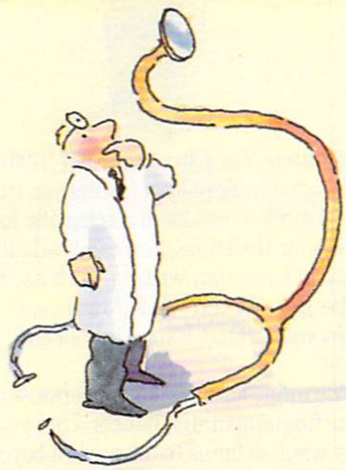
Okay, stop imagining for a minute. These things exist. At last count, there were more than 2,500 electronic bulletin boards operating in the U.S. and Canada. Anyone with a computer and modem hooked up to their telephone line can log on and exchange comments, tips, announcements, and gobs of free software with people who share their interests.

We're not talking about "information networks" here. CompuServe, GEnie, QuantumLink and the others are great, but they cost you between $5 and $25 per hour. They're run by big companies like General Electric and H & R Block. Bulletin boards are more relaxed, informal, and usually free. On the house. Gratis. You just pay for the phone call.



Do *That*

A BBS is not as slick as an information network. A guy who runs a BBS (called



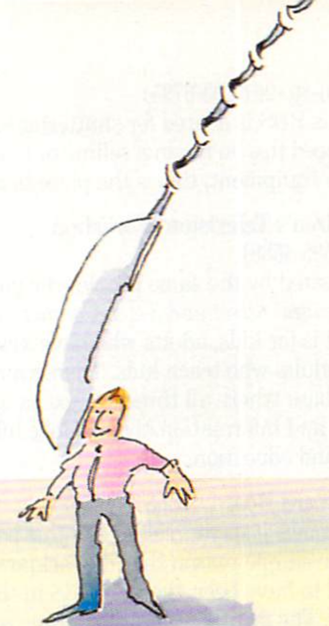
the "sysop," for system operator) may close the board down for a week simply because he's not in the mood. The informality is part of the charm. Sysops aren't in it for the money. There usually isn't any. It's love.

Don't Call a BBS from the Shower

You won't find anything like the Ed Gein Data Dating service (213-654-5587) on any of the major information networks. Few callers to this Los Angeles-based BBS are aware that Ed Gein was the Wisconsin nutball that the Hitchcock movie *Psycho* was based on. Why this bulletin board is named in honor of Ed is anybody's guess, but the various areas of the board are called "graveyards."

A new user is informed, "This board is dedicated to electronic entertainment, and the exchange of information—serious, banal, pointless, smutty—you name it, you can do it here."

It's basically a matchmaking service. You log onto the system and answer questions about yourself, revealing your age, height, weight, gender, and sexual preference. The computer matches your answers up with other callers who best fit the description of what you're looking for. Then



you can send those people electronic mail and make arrangements to meet face-to-face.

If you call Ed Gein Data Dating, here is one of the questions you'll be asked to answer:

OK. So you want to know more about me. Well I look like...

a. Death warmed over. You still interested?
b. A Val. Just a sec. . .gotta pull up my sweatshirt. Oh my God!
c. Hold on, my mirror's right here. Yes, I'm beautiful.
d. Oh, pretty much your average looker.
e. Do you really care that much about appearance?
f. I am like God's gift to man. You better be a hunk!
g. You can see for yourself. Got a copy of last month's Playgirl?
h. Actually, I wear contacts.
i. Well. . .last night my date asked for double bags at Hughes.

Get the idea? Bulletin board matchmaking services are all over. If you like Ed Gein Data Dating, you may also enjoy Affection Connection (805-527-7464), Plain Brown Wrapper (619-574-6857), Dial-Your-Match (415-991-4000) or Luv Connection (213-663-6886).

Maybe your tastes run a little wilder. If you want to *really* let your fantasies run wild, take a cold shower and call IsleNet (718-448-9119) some night. It was rated "one of the livelier erotic BBS's" in *Infomania.* Keep getting busy signals? Try Sex World (516-385-9310). Gay-only boards such as Christopher Street (201-992-5660) and MicroSlut (415-469-8111) are very popular.

A couple of years back there was even a board in California specifically for transvestites. It was called Gendernet. Cross dressers could find social centers, therapists, information about state laws and yes, places to shop. The number has since been disconnected.

Different Keystrokes for Different Folks

There's a BBS out there for everybody—peaceniks, Jesus freaks, astrologers, Nazis and child molesters. I kid you not. If you look hard enough, you'll find a board for every hobby, occupation, kink, or religion.



LINDA CLARK

Sure, it's fun to break into government data bases, change your grades on your school computer and disrupt the orbit of military satellites. But there's more to telecommunications than that. Here are a few BBS's that you might be interested in calling:

International Collectors Network (213-204-0646)

Got an early Pete Rose baseball card to sell? How about an old Beatle wig? ICN is an electronic swap shop and flea market for all sorts of collectibles. The board also posts a schedule of swap meets from around the country.

Mensa BBS (305-842-1861)

People who can qualify for membership in any of three high-IQ organizations can get to know each other on Molly and Pops' board. You can also discuss classic cars with Pops.



AmNet (303-223-1297)

James Cherry uses his bulletin board to pull together information from more than a dozen animal rights organizations. Another feature is Petscan, a list of information on the care and feeding of various pets.

The Alliance Francais BBS (803-585-8575)

This may be the first bilingual bulletin board. It was started by "Pascal Roy," who came to the U.S. from France to run a spinning mill in South Carolina. Most callers speak English, but there are lots of features in French, like a French crossword game.

Doc-In-The-Box (216-368-3888)

The doctors at Case Western Reserve University School of Medicine still make house calls—electronically. Dial up St. Silicon's Hospital and Information Dispensary and you can ask the docs medical questions.

AdventureLand (606-271-0558)

According to *Questbusters,* the voice of adventure gaming, "Doug Rogers' AdventureLand is an excellent BBS devoted to the genre, offering plenty of hint files, messages, and over 100 user-written games." *QuestBusters* also recommends The Dungeon, run by a man named Norm Marks in Pennsylvania. The BBS number is 717-235-1747. Also try Greyhawks Gallery (718-848-5673), which is dedicated to Dungeons and Dragons and other adventure games.

The Hotline (818-766-6442)

There are a lot of game players who have no interest in slaying grubs and escaping from multilevel dungeons. If you love computer games, try The Hotline, run by the folks at *Computer Entertainer* magazine. They've got reviews of all the latest games, news, sales figures, and gossip. The Hotline is also a great resource to buy computer games at discount prices. You just order the title online and it's delivered to you in a few days via mail order.

Hamnet (718-698-7875)

Emphasis on amateur radio groups and ham radio.

Photo-80 (201-790-6795)

This BBS is geared for shutterbugs. If you need tips on buying, selling or trading photo equipment, this is the place to call.

Children's Television Workshop (212-595-4588)

Created by the same people who gave us *Sesame Street* and *3-2-1-Contact,* this board is for kids, adults who have kids, and adults who teach kids. There's a message base where all three can exchange ideas and information about public television and education.

The Ward Board (312-849-6279)

You owe it to yourself to call this board for the simple reason that it is acknowledged to have been the first BBS in the world. The fact that it's still running today is astounding. It was created back in the dark ages of 1978 by two guys in Chicago, Ward Christensen and Randy Suess. Christensen went on to achieve fame and fortune by designing the "XModem" protocol for transmitting text.



The Audiophile Network (818-988-0452)

Like it says, this BBS is for audiophiles—people who can't get enough stereo, CD, and video equipment. Sysop Guy Hickey tells you where you can listen to high end stereo components or purchase a blow-your-ears-out set of speakers cheap.

Boston Computer Society (617-786-9788)

Founded in a schoolroom by a 13 year-old-boy, BCS now boasts over 20,000 members. It's one of the largest user groups in the world. This BBS, naturally, is one of the best when it comes to overall depth of material.

Pavlov's Cat (213-306-1172)

Based in Venice, California, this board specializes in insanity, irreverence, and off the wall humor.

Wildlife Educational Bulletin Board (513-382-2763)

News and information about wildlife and conservation.

Peacenet (415-896-0893)

This one is run by the Disarmament Resource Center in San Francisco. They're dedicated to using technology to support peace throughout the world. Call this one if you want to find out the distribution of ICBMs in Europe.



Computers For Christ (408-997-2790)

Located in San Jose, California, this board aims to establish a scientific foundation for the Bible. You can read all kinds of Christian writing, such as "How To Be Born Again" and "Mathematical Phenomena That Exist Only in the Bible."

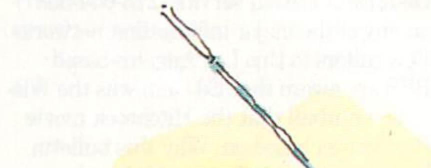
Warning: These folks are serious in their fundamentalist beliefs. Last year they went so far as to advocate a boycott of *The Flintstones* TV show. Fred Flintstone, it seems, was a spokesperson for 7-11 stores, which sell *Playboy* and *Penthouse!* It takes all kinds.

Baha'i BBS (303-449-3306)

For people who believe in the Baha'i religion.

Golfsoft (612-941-8519)

Golf tips, schedules and other information for duffers.



Logopolis (312-296-7782)

Dr. Who fans have found a home. This board is a combination fan club, bookstore, and just about everything you'd ever want to know about Whomania. Actually, this is one of many Dr. Who boards. Many computer people are also science fiction lovers.

Dickinson's Movie Guide (913-432-5544)

Synopses, ratings, reviews, feature

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COMMODORE 64 and AMIGA
GRAPHICS CONTEST

Commodore Magazine is sponsoring our third Graphics Contest. This year we have added an Amiga category for aspiring Amiga artists out there, in addition to the Commodore 64 category. Winners will receive a cash prize and the winning graphics screens will be published in the June, 1988 issue of ***Commodore Magazine.***

Commodore 64 Category Prizes
Grand Award: $500 and Publication in *Commodore Magazine*
Five Runners Up: $100 and Publication in *Commodore Magazine*
Honorable Mention: Publication in *Commodore Magazine*

Amiga Category Prizes
Grand Award: $500 and Publication in *Commodore Magazine*
Five Runners Up: $100 and Publication in *Commodore Magazine*
Honorable Mention: Publication in *Commodore Magazine*

GRAPHICS CONTEST RULES

1. This contest is strictly for amateur artists. Anyone who derives more than 10% of their annual income from the sale of original artwork is ineligible.
2. Employees of Commodore Magazine, Inc., Commodore Business Machines, Inc., Commodore Electronics Ltd., Commodore International Ltd., their advertising and promotional agencies and their immediate families are not eligible to enter this contest.
3. Each entry must be wholly the product of the developer in whose name the entry has been submitted. Copyrighted images are not eligible. This includes record album covers, movie figures, famous paintings and cartoon characters. Outside assistance is expressly prohibited and will provide cause for disqualification.
4. A maximum of two screens per person is allowed. You may submit either two screens for one computer or one screen for each computer. If a contestant submits more than two screens for consideration, all of that person's entries will be invalidated.
5. All entries must be submitted on disk, 1541 format for the Commodore 64 and 3.5-inch format for the Amiga, with the following marked clearly on the disk's label:
a. Contestant's name, address and phone number
b. Picture title(s)
c. Graphics package or programming aid used to create the graphics
d. The words "GRAPHICS CONTEST"

A photo of the screen display or a printed copy of the screen does not constitute an acceptable entry.
6. Mail entries before January 31, 1988 to *Commodore Magazine,* 1200 Wilson Drive, West Chester, PA 19380, ATTN: GRAPHICS CONTEST.

GENERAL CONDITIONS

> Graphic screens are judged on originality, creativity and best use of the computer's unique graphics features.
> Entries will be judged by the staff of *Commodore Magazine.*
> Make sure your mailer will protect your disk from damage. Affix sufficient first-class postage. Mail your disk and the official entry blank to the address shown above in time to reach us by the January 31, 1988 deadline.
> Entries become the property of *Commodore Magazine,* which reserves the right to adapt, use or publish all entries received. No disks will be returned, so be sure to make a copy of your entry before you submit it to the contest.
> Non-winning entries will not be acknowledged. Winners will be notified by February 28, 1988. Taxes on cash prizes are the winners' responsibilities.

PLEASE PRINT

NAME ______________________ PHONE ______________
ADDRESS ______________________________________
CITY ________________ STATE ____________ ZIP ________
AGE ________ SIGNATURE ______________________________
PARENT'S SIGNATURE (IF CONTESTANT IS UNDER 18) ______________
PICTURE TITLE #1 ______________________ COMPUTER ________
GRAPHICS PACKAGE OR PROGRAMMING AID USED ______________
PICTURE TITLE #2 ______________________ COMPUTER ________
GRAPHICS PACKAGE OR PROGRAMMING AID USED ______________

DEADLINE FOR ENTRY: JANUARY 31, 1988. MAXIMUM 2 SCREENS PER CONTESTANT.

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stories, and credits of old and new movies. This one is for real film fanatics.

Loonieland! (404-934-6617)
Nothing special about this BBS. I just liked the name. If you feel the same way, you might also want to call Moondoggie Animal House (513-683-2403).

And that doesn't even scratch the surface. Telecommunications expert Alfred Glossbrenner says, "The impact of the BBS phenomenon has yet to be felt, but it's coming. When it arrives, it will sweep the nation." If you haven't dialed up your first bulletin board yet, get with it! There's an electronic candy store out there at your fingertips. Why wait for the rest of the world to discover BBS and ruin it? Get in on the revolution while it's being born.

Don't Stop Here

There's a good chance that some of the boards mentioned in this article will be off the airwaves by the time the magazine is printed. The average life-span of a BBS is only three months, according to Mike Cane, author of *The Computer Phone Book.*

One way to keep on top of them is to subscribe to Ric Manning's Bulletin Board Systems, which costs $26.50 for eight issues. Contact: Meckler Publishing, 11 Ferry Lane West, Westport CT 06880. Another resource is CJ Innovations, P.O. Box 6, Garnerville NY 10923. They sell a nationwide list of BBSs for $3.75. You can also find lists in computer magazines and on the BBSs themselves.

Interested in starting your own BBS? Kira Corporation makes a package called *Syntech Bulletin Board System Construction Set* that will turn your plain old Commodore 64 into a real BBS for just $49.95. You can contact them at P.O. Box 129, Kutztown, PA 19530, or 215-633-5699.

The GEnie Roundtable For BBS Sysops and Users boasts 800 live files, including everything you could possibly need to start and operate a BBS. Thousands of people log on every month. They also post BBS phone lists, BBS reviews, and information about the latest BBS publications. Best of all, it's a great way to meet BBS lovers nationwide. Sysops Brian Raub and Mark Pinkstone host a BBS Real Time Conference every Monday night at ten o'clock Eastern Standard Time.



Here are a few books you should look at:

Infomania: The Guide to Essential Electronic Services, Elizabeth Ferrarini, Houghton Mifflin, 1985.

The Complete Handbook of Personal Computer Communications, Alfred Glossbrenner, St. Martin's Press, 1985.

National Directory of Bulletin Board Systems, Ric Manning, Meckler Publishing, 1985.

The Computer Phone Book: Directory of Online Systems, Mike Cane, New American Library, 1986.

by Thomas John and Royce Schrieber

A Look at Lisp

Here is a short introduction to Lisp with small BASIC program which has some of the properties of Lisp.

Artificial Intelligence (AI) is concerned with giving human intelligence to computers. AI programs try to express human thinking in terms of objects which computers understand. Since all such programs seem to require certain common features, several programming languages have been developed for AI tasks. The main language currently in use for AI programming is Lisp.

Lisp stands for "list processing." It is one of the oldest computer languages. Its name indicates the feature which distinguishes Lisp from most languages: processing lists of objects. Lisp computation does not deal with numbers or character strings as heavily as BASIC. It is not impossible to use BASIC or FORTRAN for Artificial Intelligence programming, but difficulties arise with their use. This difficulty comes from the way we think. Our thinking tends to be somewhat disorganized, while computers work well with organized data. Computer languages like BASIC are best suited for tasks where data can be organized according to the computer's expectations. Usually this means we must organize the aspects of a problem into tables of fixed size. Our intellectual activities cannot always be so organized. Thus a language for AI programming must have a way of dealing with lists of all kinds of objects.

Lisp handles this requirement adeptly by treating all objects as lists. Lisp builds a thinking mechanism from a few basic operations on lists. The use of Lisp in creating a thinking mechanism can be seen in the way logical rules are interpreted by programs called Expert Systems. You can see how Lisp uses its list operations by looking at the way some simple expert systems are designed. Such systems can be considered to be intelligent because they have some human intelligence. One of the examples of such a program is a diagnostic program to find out why a car will not start on a cold winter morning. (We don't know why this example is a favorite with several AI experts. Perhaps they have temperamental old cars.)



WILSON HARP

Lisp stands for "list processing." It is one of the oldest computer languages.

For example, if a mechanic changes the spark plugs on a car, he or she may be using some diagnostic information and drawing a conclusion which connects the car's problems to the spark plugs. The diagnostic information is often available to anyone. The knowledge of a mechanic is condensed into some rules which connect this information to conclusions.

If a program is provided with the rules used by an expert mechanic then presumably this program can use these rules to form conclusions. This will be an intelligent program because it can simulate an intelligent mechanic. In order to form conclusions, this program will perform logical deductions. This logical deduction can be programed in Lisp.

Lisp performs logical deduction using some simple operations on lists of rules. The most fundamental of these operations simply obtains the first element of a given list. Another fundamental operation obtains the part of the list which remains after removing the first element. We shall first describe these operations and later see how these operations can be used to perform logical deductions.

Lists in Lisp are written as collections of individual objects separated by spaces and enclosed within parentheses. The individual objects may be numbers or words. Lists can contain other lists. For example, all of the following are lists in Lisp:

```
(1 2.5 ALPHA OMEGA)
((ENGINE WON'T START) (IF)
(BATTERY IS DEAD))
```

Incidentally, Lisp does not know that the second list above expresses an important fact while the first list has no meaning. To Lisp, both lists above are simply lists.

The first operation on lists we shall see is the CAR operation. The word CAR is actually derived from the phrase "Contents of Address part of Register." The CAR operation obtains the first element of a list. The reason for such a strange name for an operation which simply obtains the first element of a list comes from the way lists are handled in Lisp. We cannot go into that here, but we will describe how CAR works.

Suppose L is the first list above. The (CAR L) will be 1. If L is the second list above then (CAR L) will be the list (ENGINE WON'T START). If L is the list (ENGINE WON'T START) then (CAR L) will be the word ENGINE. CAR applies only to lists. You cannot take the CAR of a word like ENGINE.

CDR is an operation which comes with CAR. The CDR of a list is the part of the list which remains after removing the first element. CDR is pronounced as something like "kould-her." It is derived from the phrase "Contents of the Decrement part of Register." Again the reasons for this name are connected to the internal representation of lists in Lisp. There is a connection between CAR and CDR which accounts for their similar names.

To see how the CDR works, suppose that L is the first list above. Then the CDR of L will be the list (2.5 ALPHA OMEGA). For the second list above the CDR will be ((IF) (BATTERY IS DEAD)).

Now let us consider a list of rules regarding starting problems for cars. These rules are merely for illustration. As everyone can see they are only a small part of the rules for diagnosing such problems. We will write these rules as a long list of conclusions and associated conditions.

```
( ((ENGINE WON'T START)
    ((BATTERY IS DEAD)))
  ((ENGINE WON'T START)
    ((THERE IS NO GAS)))
  ((ENGINE WON'T START)
    ((BATTERY IS GOOD)
    (CABLES ARE LOOSE)))
  ((ENGINE WON'T START)
    ((THERE IS GAS)
```

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(BATTERY IS GOOD)
(FUEL LINE IS BROKEN)))

We have written this rule after discarding a few unnecessary words. For example, the third rule above should be read

"ENGINE WON'T START IF BATTERY IS GOOD AND CABLES ARE LOOSE."

We imply the IF and AND above by the way the rules are written as lists.

In order to diagnose a problem such as whether ENGINE WON'T START, we must use Logical deduction to reduce the problem to other conditions. Lisp simulates this process using CAR and CDR. It first finds the List of rules, as above, which deal with engine starting problems. If L is a List of rules, then the required list of rules is

(CAR (CAR (CAR L))) is (ENGINE WON'T START).

After finding the required list of rules we can pick of the first rule in this list by using (CAR L). The list of situations which apply to this rule are given in the part of the list following (ENGINE WON'T START) which can be found by using the CDR on this rule. In this case, you can verify that the list of possible causes according to the first rule, i.e. ((BATTERY IS DEAD)) is (CAR (CDR (CAR L))). If the first rule does not provide the proper explanation then we can reject the first rule and proceed to the later rules by replacing L with the CDR of L.

To summarize, if rules are expressed as lists you need only some operations on lists to perform logical deduction using these rules. Lisp provides the List operations. Since Lisp is specialized to handle such operations, it manipulates Lists more efficiently than other languages.

When performing logical deduction we sometimes have to follow certain lines of deduction which may later turn out to be unproductive. For example you may suspect that a car does not start because of a weak battery. In the next step of this line of deduction you may use a rule that a battery is weak if lights are dim. If it turns out that lights work normally then this entire chain of deduction concerning the battery has to be abandoned and we must go on to new lines of deduction. This kind of facility is easy to program in languages like Lisp where there is a facility for "recursion."

The rest of this article describes a small BASIC program which has some of the properties of Lisp. This program creates a system for performing some logical deductions.

The program performs deduction on certain special collections of rules which are entered as DATA statements at the end of the program. The rules are ended with an asterisk.

This program does not have all of the list handling facilities of Lisp. Because of this limitation, each conclusion can be made from only two sets of premises. There can also be only two conditions in each rule. To illustrate how this program works let us consider the set of rules which are attached to the program. In these rules, we use single letters to stand for statements. For example, the statement

DATA (A) IF (B) AND (C)

says that "if B and C are true, then A is true." Note that there are only two rules with A on the left side of the IF. Thus we can not add one more rule which concludes A. Also not that we cannot have any rule with more than one AND in it, for example (A) IF (B) AND (C) AND (D) can not be used by this program. You need not have two rules for each statement. For example note that there is only one rule to help us conclude anything about B. We need not have two conditions in every rule. It is admissible to have a rule like (C) IF (D). It is possible also to have a rule with no further conditions. For example (G), says G is true with no conditions. Obviously we need some basic facts to help us conclude anything using these rules. The last line of this program says that F, G, H and I may be considered to be true facts.

This program runs on a Commodore 64. Enter this program into a file called EXPERT. Now load this program as you would load any BASIC program and run it. The program needs a few seconds to "understand" the rules expressed within the DATA statements. Then the program prints a "?" and waits for the first question you want it to answer.

When this program runs you can enter any of the statements in the rules as a question. The program comes back with an answer of FALSE of TRUE. If the answer is TRUE, you can enter WHY. Then the program will provide an explanation for its answer by proceeding backwards through its chain of deduction. Enter Q to end the program.

For example if you enter the question

(C)

The program will print out

TRUE

To see how EXPERT arrived at this conclusion, you can now enter WHY in response to the "?" printed by the program (you can also enter another question if you wish.) If you enter WHY, then the program prints an explanation for its answer. Here it will print:

(I)

(F)

(C) IF (F) AND (I)

This means: I is true according to the last DATA statement and so is F. There is a rule which says that if F and I are true then C is also true. Thus we can conclude that C is true.

You can experiment with entering other questions. For example if you enter A the answer will be TRUE. If you now enter WHY you will get a much longer explanation. You can also see what happens if you change the DATA statement in the last line. Suppose you change it to

870 DATA (G),(H),(I),*

then you will see that C will be FALSE. If you enter WHY when the program says FALSE then the program does not provide any explanation since its only reason for saying something is FALSE is that the program could not find any reason to say TRUE. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

Expert

```
100 DIM S$(100),R(100,2),T(1000),
    SK%(100),Q%(100)'BQGD
110 S$(0)="*":I=0:P=0'DLPA
120 REM READ IN RULES'BLEA
130 READ A$:J=0:IF A$="*" THEN
    170'FLBD
140 P=P+1:GOSUB 690:R(P,0)=K:GOSUB 690
    :R(P,1)=K:GOSUB 690:R(P,2)=K
    :GOTO 130'JSYO
150 PRINT"NOT BINARY":STOP'CBPE
160 REM FIND ROOT'BISD
170 J=J+1:W=0:IF J>I THEN PRINT"NO
```

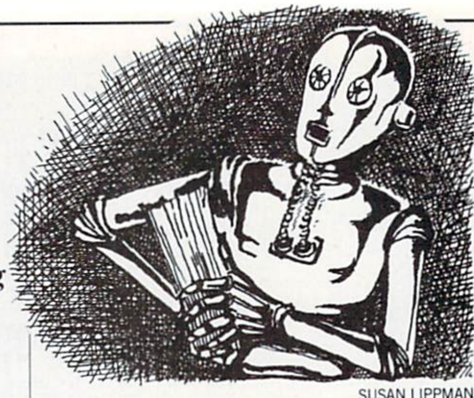
```
     ROOT":STOP'IKXL
180 W=W+1:IF W=P THEN 220'FJWI
190 IF R(W,1)<>J AND R(W,
    2)<>J THEN 180'HRHM
200 GOTO 170'BDHW
210 REM BUILD TREE FROM RULES'BSMC
220 T(1)=J:S=0:GOSUB 780:S=1
    :GOSUB 780'FTYF
230 GOSUB 800:IF S=0 THEN 330'EJQD
240 K=S:IF T(K)=0 THEN 230'ELJF
250 OF=0:IF T(K)<0 THEN 290'EMFG
260 FOR J=1 TO P:IF T(K)<>R(J,
    0) THEN 280'HRSK
270 S=2*K+OF:T(S)=-J:GOSUB 780:OF=OF+1
    :IF OF>2 THEN 150'LDXR
280 NEXT:GOTO 230'CERF
290 S=2*K:T(S)=R(-T(K),1)
    :GOSUB 780'FVTN
300 S=2*K+1:T(S)=R(-T(K),2)
    :GOSUB 780'GWNF
310 GOTO 230'BDEY
320 REM READ IN QUESTIONS'BPNE
330 INPUT A$:IF A$="WHY" THEN 620'EIAF
340 Z=0:J=0:GOSUB 690'DJIF
350 REM FIND ROOT NODE OF
    QUESTION'BWNJ
360 S=0:GOSUB 780:S=1:GOSUB 780'ENMI
370 GOSUB 800:IF S=0 THEN PRINT
    "FALSE":GOTO 330'GKOL
380 J=S:IF T(J)=K THEN 420'ELKK
390 IF T(J)=0 THEN 370'DIGJ
400 S=J*2+1:GOSUB 780:S=J*2:GOSUB 780
    :GOTO 370'IUBH
410 REM FIND ANSWER'BKCC
420 IF K=0 THEN END'ECWC
430 S=0:GOSUB 780:S=J:GOSUB 780'ENMG
440 GOSUB 800:IF S=0 THEN PRINT Z$
    :GOTO 330'GMDI
450 J=S:IF T(J)=0 THEN 440'ELKI
460 IF T(J)<0 THEN 500'DICH
470 IF T(2*J)=0 THEN Z$="FALSE"
    :GOTO 550'GMVM
480 IF T(2*J+1)<0 THEN S=2*J+1
    :GOSUB 780'JPRP
490 S=2*J:GOSUB 780:GOTO 440'ELML
500 Z=Z+1:Q%(Z)=T(J)'DNKE
510 IF T(2*J)=0 THEN Z$="TRUE"
    :GOTO 590'GMGH
520 IF T(2*J+1)>0 THEN S=2*J+1
    :GOSUB 780'JPPK
530 S=2*J:GOSUB 780:GOTO 440'ELMG
540 REM POP UNTIL A RULE THEN PUSH
    RULE'BAQL
550 Z=0:GOSUB 800:IF S=0 THEN 570'FMPJ
560 IF T(S)>0 THEN 550'DIOI
570 GOSUB 780:GOTO 440'CHJI
580 REM POP UNTIL ATOM THEN PUSH
    ATOM'BYSO
590 GOSUB 800:IF S=0 THEN 610'EJRM
600 J=S:IF T(S)<0 THEN 590'ELBF
610 GOSUB 780:GOTO 440'CHJD
615 REM WHY QUESTION WAS TRUE'BSQM
620 IF Z=0 THEN 330'DFEF
630 FOR J=Z TO 1 STEP -1'FEXH
640 W=-Q%(J):PRINT "("S$(R(W,0))")";
    'DSRK
650 IF R(W,1)<>0 THEN PRINT " IF
    ("S$(R(W,1))")";'FSBN
660 IF R(W,2)<>0 THEN PRINT " AND
    ("S$(R(W,2))")";'FSWO
670 PRINT:NEXT:GOTO 330'DFXJ
680 REM FIND ATOM AND TOKEN'BQCN
690 J=J+1:IF J>LEN(A$) THEN K=0
    :RETURN'IMUQ
700 K=J+1:IF MID$(A$,J,
    1)<>"(" THEN 690'HPNJ
710 J=J+1:IF J>LEN(A$) THEN K=0
    :RETURN'IMUJ
720 IF MID$(A$,J,1)<>")" THEN 710'FLUI
730 B$=MID$(A$,K,J-K):K=0'EOAJ
740 K=K+1:IF S$(K)<>B$ AND K<I THEN
    740'IQCN
750 IF S$(K)=B$ THEN RETURN'EHJJ
760 I=I+1:S$(I)=B$:K=I:RETURN'FPBN
770 REM PUSH ON STACK'BLAL
780 SK%(SP)=S:SP=SP+1:RETURN'EPTP
790 REM POP OFF STACK'BLGN
800 SP=SP-1:S=SK%(SP):RETURN'EPUI
810 DATA (A) IF (B) AND (C)'BOHG
820 DATA (A) IF (D) AND (E)'BOLH
830 DATA (B) IF (C) AND (D)'BOKI
840 DATA (C) IF (F) AND (I)'BOTJ
850 DATA (D) IF (F) AND (G)'BOSK
860 DATA (E) IF (H) AND (I)'BOXL
870 DATA (F),(G),(H),(I),*'BRPM
```

END

by Shay Addams

The Return of Floyd

News and opinion from a leading explorer of those fantasy realms called adventure games.



SUSAN LIPPMAN

Toss out the mapping paper and grab a box of Kleenex — Meretzky has done it again to poor Floyd.

Floyd, that precocious robot who saved your life in *Planetfall* a few years ago, is back. In the conclusion to Steve Meretzky's science fiction farce, you saved the planet Resida (you *did* save it, didn't you?). This sequel promotes you from swabbing decks for the Stellar Patrol to a new position on the space station Gamma Delta Gamma. Don't get excited, for in *Stationfall* your assignment is pushing pencils as an office worker, and your first job is to pick up a supply of "request form forms" from a neighboring station. When you arrive, however, there's not a soul on board. Unless you figure out what happened to the crew and take appropriate measures, the same fate is in store for you —and the rest of humanity.

Readers of Fred Saberhagen's *Berserker* series may detect a familiar theme slowly materializing as the search turns up tapes revealing events that led up to the crew's disappearance. The Captain's log describes a small metal pyramid found on an alien ship, and how the station's machinery and robots began to malfunction in unpredictable ways after the pyramid was brought aboard. To delve further into the mystery you'll definitely need a stack of mapping paper, for there are seven levels on the station and over 100 locations.

To throw you off the trail, Meretzky created a few locations that cannot be entered without solving puzzles. And when you finally approach the game's conclusion, toss out the mapping paper and grab a box of Kleenex — Meretzky has done it again to poor Floyd. *Planetfall* was among my favorite text adventures, and *Stationfall* is equally comical and well-written.

Lurking Horror: Lebling's Latest

Dave Lebling's new text adventure, *Lurking Horror* pays tribute to a little-known master of American horror, H.P. Lovecraft. Lovecraft's stories were rooted in his "Cthulhu mythos," which told of The Old Ones lurking outside a gateway from an alternative universe and occasionally breaking through in hopes of reclaiming the earth. Lovecraft made his eerie tales more believable by introducing evidence in a letter or a rare book, and Lebling uses a high-tech counterpart — a word processing file.

The story begins when you, a student at G.U.E. Tech, try to open your file on the campus computer so you can do a term paper that's due the next day. But instead of the file containing your notes, you retrieve a sinister message describing a hideous creature, a summoning, and a sacrifice. Into the building's spooky basement you go, then up to the top of the dome and back down again into even deeper dungeons. The people you meet range from a helpful hacker to an obstinate janitor and a professor practicing black magic.

After penetrating the lower regions of the university you will uncover a threat not only to yourself but also to the world, a diabolical scheme only you can thwart. Infocom no longer classifies games by skill level, but these are in the intermediate range. With *Horror* you get a coupon that lets you buy another of Lebling's games, *Suspect* for $14.95; *Stationfall* contains a similar deal for *Planetfall*. Other news from Infocom concerns their Invisi-Clue books, which will now include solutions to two games and sell for $9.95. The first one in this format features *Hollywood Hijinx* and *Bureaucracy.*

Legacy of the Ancients

Adorned with the best-looking dungeons I've ever seen in a 64 role-playing game, *Legacy* kicks off inside a Galactic Museum founded in the land of Tarmalon by The Ancients long, long ago. The goal, which you learn in a telepathic message beamed in from a Thief's spirit, is to destroy the Wizard's Compendium, a leather scroll you found on his body. Otherwise the scroll will fall into the wrong hands — the gnarled, grasping hands of an evil warlord.

Red and yellow flames dance on the tips of torches lining the walls, the first evidence of the startling clarity and detail of *Legacy's* first-person graphics. With jade, topaz and similar coins, you can view the Museum's exhibits. Some offer useful tools, such as a knife, while others enable you to travel to the realms they depict. You can check out the town of Thornberry, seek the Pirate's Treasure and a brilliant gem, or journey to another locale in hopes of accomplishing a related mini-quest. Or you can just find the nearest door and head out into the countryside. No matter where you choose to go, you can always return to the Museum via teleportation gates. The varied terrain is shown from a top-down view, as in most role-playing games. But the buildings in each town display a new face: When you walk inside, the roof disappears so you can see your character and the people inside. Then it reappears when you exit.

It's no problem outrunning monsters in the countryside, but those in the dungeons won't let you escape without a fight. These creatures are illustrated with full-screen, first-person graphics that flicker and flash when they attack, making them seem to race or fly down the hall at you. A limited form of ranged combat prevents you from striking distant fiends unless you're armed with a long-range weapon. There is no grid system in the 24 dungeons, but traps, vents and other markings on the floor, along with well-orchestrated sound effects of your footsteps and other noises heard at specific places, make the mazes easier to map. The game may be saved while inside a dungeon, and disk access is extremely brisk during the game and when loading a saved character. Unlike baseball, this game's not over when it's over: Get killed and you'll be resurrected at a random location.

Legacy was created by Chuck and John Dougherty, who did *Questron*. Its uncommon premise — using the Museum as a staging area for mini-quests to distant areas — yields a unique role-playing experience. The relatively easy puzzles, simple yet adequate magic and combat systems and streamlined interface result in a

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by Robert W. Baker

Inside Q-Link

Explore the inner workings of the Q-Link telecommunication service with network pro Bob Baker.

With the holidays just around the corner, there are a number of sections on Q-Link that can help you save time and money during the holiday season and throughout the rest of the year.

CompuStore provides on-line shopping convenience together with discount prices and occasional auctions. You can browse the on-line 'stores' without signing up as a member, so you can get to see what's available. If you find something of interest, then you can sign up as a member online and place your order five days later. Membership costs $26 for 18 months or $41 for 30 months, but special shorter term trial memberships are offered from time to time.

Travel Info

If you're doing any traveling over the holidays, be sure to check out the "Eaasy Sabre" area for airflights and hotels. You can check flight schedules and fares to find the most convenient or less expensive flights, plus make reservations — all online. Hotels are easy to locate, with reference lists by direction and distance from the major airports. Here again, you can make reservations directly while online.

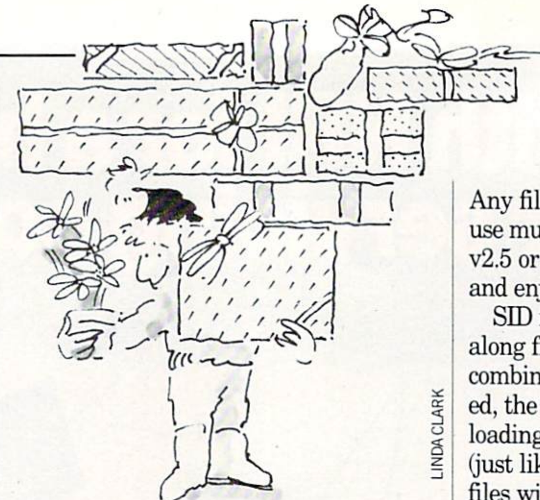
Other services offered via "Eaasy Sabre" include rental car reservations, information on the Admirals Club, plus the ability to check your AAdvantage mileage with American Airlines frequent flyer program. They even have an exclusive Bargain Finder for automatically finding the lowest fares for any flights you may have booked.

Remember that you need to register in advance as an "Eaasy Sabre" user, in order to make reservations online via the "Eaasy Sabre" system.

There's no charge for registering and you can signup online, but it may take some time for approval if you're not already an AAdvantage member.

Flower Delivery

Need to send a special flower to a special person in a hurry? Try checking "Long Distance Roses" also in The Mall. Here you can order roses or orchids that



LINDA CLARK

CompuStore provides on-line shopping convenience together with discount prices and occasional auctions.

are carefully packed in wet foam and shipped in special styrofoam boxes. They can be delivered by Federal Express almost anywhere in the U.S. along with an enclosing card with your personal message.

Music

Another area of Q-Link that should be extremely popular around the holidays is the "Music Room" within the Commodore Community in CIN. This is the place for all those interested in making, or even just playing music with your Commodore computer. There are hundreds of arrangements waiting to be downloaded and played, and all the information you need to get started can be found in the handy Articles and Library areas.

SID Files

As I mentioned earlier, there is much information available for newcomers to this exciting part of Commodore computing. Of particular interest is the SID Player Music Files Tutor article which you can read on-line or save to disk and print out later. This article explains all the special file suffixes used within the Music Room download libraries, what they mean, and how to use each of the different file types they represent.

Just as the other download libraries utilize the .arc .sda .lnx .lbr and other suffixes for special download file structures, the Music Room uses its own set of extensions for the available special music files. Here you'll see things like:

.mus	.pil	.sda	
.sal	.pic	.wpl	.wds

Any file ending with '.mus' is a ready-to-use music file. It can be loaded into Sid/Pic v2.5 or any other SID player utility as is and enjoyed immediately.

SID files ending with '.sal' are sing-along files, and actually contain two files combined into one. After being downloaded, the two files need to be recreated by loading and running the downloaded file (just like a self-dissolving arc file). Two files will be created, a music file and a words file. When the music is played with your SID player, the complete lyrics to the song will be displayed.

The words files have the '.wds' extension and contain the words or lyrics for a certain music file. The files will be named exactly alike, except for the extension. Sometimes an author or arranger adds the word file after the music is uploaded and already in use.

You might also find graphics files with the '.pic' extension. These are accompanying pictures for a music file with the same name. Be sure to check for a '.wds' file if you see a '.pic' file, since all three may be available.

A '.pil' file is another type of self dissolving arc file. This time, the download file contains a music file and a picture file. The files are dissolved the same way, simply load and run the downloaded file to recreate the two individual files.

The '.wpl' or '.sda' files are also file collections, but this time they might contain more than two files. Often a music, words and picture file are all compiled into a single download file. Also, some compression may be used so the file is shorter than the total of the originals. Be sure to leave extra room on your disk for the new files to be written when you load and run the downloaded file.

As the SID Tutor article states... 'Remember, first you need a sid-player utility.' Well, you can find these in the Utilities section of the Music Room Download Library along with documentation on how to use them.

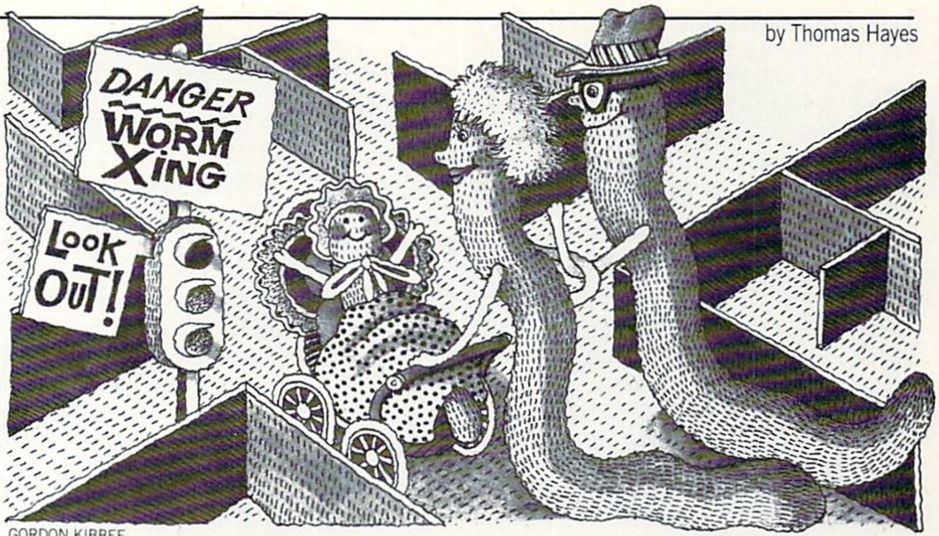
If you get really serious about SID music, you'll also find information on how to write your own arrangements and advice on which music programs to use, etc. For the technically inclined, there's even information on how to add an extra 6582 SID chip to your system. If you follow the instructions you'll be able to generate true stereo sound, with three voices on each

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by Thomas Hayes

Worm Xing

Maneuver your worm through the maze and try to make it to the top.



GORDON KIBBEE

A worm's life could be described as dangerous and sometimes boring. Worm Xing is dangerous, but far from boring. The game requires you to put yourself in the worm's shoes, so to speak. A worm is never really in danger except when it's trying to cross a pathway. So welcome to the pathway to danger.

After typing in Worm Xing save a copy to disk or cassette and run the program. You will then see at the top left the score and the word "WORM." At the right is the time and the word "XING." At the bottom are your eight worms, one black and seven blue. The blue border surrounding the various display items is like an electric fence. If your worm comes in contact with the blue border, it's curtains for your worm.

You can increase your score by navigating through the various obstacles to the top of the screen between the score and time displays. At first this may seem very easy to accomplish. But as you continue to play the game, it gets harder and harder to make it to the top. You may be asking, "How do you get to the top?" Well, your worm is always squirming around. But to move in any direction you have to use the joystick. With the joystick plugged into port #2 you can move up, down, left, right, and diagonally in any direction. If you navigate through the obstacles to the top and make it, your worm will be moved to the starting location at the bottom of the screen. At that point, the next set of obstacles will be increased, as well as the score. However, if in your pursuit to the top you encounter a mishap and come in contact with one of the obstacles you will lose one of your worms and you will be moved to the bottom of the screen. If at this point you still have a worm left then you will be given another chance to make it to the top. If you have run out of worms the game is ended and your score is displayed on the screen.

There are two scores in Worm Xing. The score you see as you play the game and a final score. Your final score is the score in the game minus the time divided by one hundred. So if at the end of the game your score was 1000 and the time was 5000, then the final score would be 1000 minus 50 which is 950. If during the game your time reaches 999999 then the time is set to zero and the score is also set to zero.

Programming Tidbits

You may be interested in several portions of the program. The first part is machine language, which is used for the movement of the obstacles because BASIC was too slow. It uses random numbers to select one of the rows of the screen display and to move it right or left. If you are familiar with machine language, then the two routines, one to move a screen line right and one to move a screen line left, are easy enough to disassemble. Another machine language routine is lodged in the normal interrupt of the computer and handles the joystick movement. The rest of the program is in BASIC and is easily understood. As a final note, the worm will just fit between two rows of obstacles with one row in-between. Now type in the program and have fun. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

Worm Xing

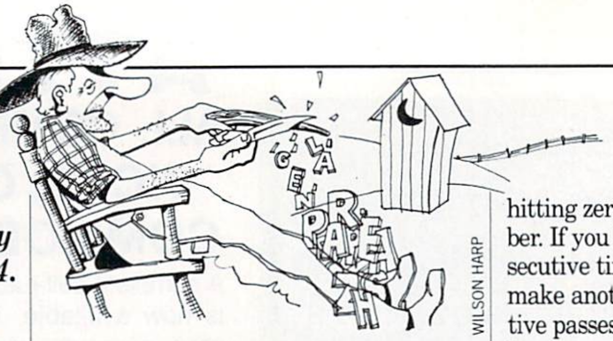
```
100 POKE 53280,0:POKE 53281,15
    :PRINT"[CLEAR,BLUE]";'DSCB
110 V=53248:DN=15:X=198:B=15:C=0
    :S=54272:KL=70'HKWI
150 FOR A=S TO S+24:POKE A,0 :NEXT A
    :POKE S+24,15'ISEI
160 POKE S,55:POKE S+1,KL
    :POKE S+6,128'FRNI
200 T$="[BLUE,CMDR H,BLACK] SCORE= 00
    [SPACE5,BLUE,CMDR N,SPACE5,CMDR H,
    BLACK] TIME= 00[SPACE7,BLUE,
    CMDR N]"'BCCH
205 T$=T$+"[CMDR H,PURPLE]WORM[BLUE]
    [CMDR N,CMDR U10,SPACE5,CMDR U11,
    CMDR H,PURPLE]XING[BLUE] [CMDR N]
    "'CEUB
210 T$=T$+"[CMDR U7,SPACE26,CMDR U7]
    "'CETM
215 B$="[SPACE6,CMDR A,SHFT *3,CMDR R,
    SHFT *4,CMDR R,SHFT *4,CMDR R,
    SHFT *4,CMDR R,SHFT *4,CMDR R,
    SHFT *4,CMDR R,SHFT *4]"'BCWE
220 B$=B$+"[SPACE6,SHFT -,SPACE3,
    SHFT -,SPACE4,SHFT -,SPACE4,
    SHFT -,SPACE4,SHFT -,SPACE4,
    SHFT -,SPACE4,SHFT -]"'CERJ
300 PRINT T$;"[BLUE,HOME,DOWN23]";B$;
    'BHYA
450 FOR Y=55416 TO 56175:POKE Y,2
    :NEXT Y'FRRJ
460 FOR A=1144 TO 1899 STEP(DN+4)
    :FOR Y=1 TO 4:POKE Y+A,81:NEXT Y
    :NEXT A'MDCR
500 GOSUB 8000:POKE 1020,0
    :SYS 49365'DROE
550 IF PEEK(1020)>0 THEN POKE V+21,
```

```
    PEEK(V+21)AND 254:GOSUB 5000'KYPP
560 X=X-1:IF X=191 THEN X=197'GMYL
561 POKE S+4,17:KL=KL-10:POKE S+1,KL
    :IF KL<15 THEN:KL=70'KDXT
565 FOR Y=2040 TO 2047:POKE Y,X
    :NEXT Y'FPIQ
570 IF PEEK(V+21)=0 THEN 15000'FLCL
580 C=C+1:PRINT"[HOME,BLACK,RIGHT29,
    SPACE7,LEFT7]";C;'DHOT
585 IF C<>999999 THEN 600'EKVQ
590 PRINT"[HOME,BLACK,RIGHT8,SPACE7,
    LEFT7]";:Q=INT(Q-(C/100))
    :IF Q<0 THEN Q=0'JRRY
595 C=0:PRINT Q;'CFGP
600 Z=INT((RND(1)*37)+1):G=(Z/2)
    :H=(INT(Z/2)):IF G<>H THEN
    Z=Z-1'QGDR
610 POKE 251,A(Z):POKE 252,A(Z+1)'DSNG
700 T=INT(RND(1)*2)+1:IF T=1 THEN SYS
    49152:GOTO 1000'KVDL
710 SYS 49185'BFSD
1000 GET A$:IF A$=""THEN 550'EIJW
1005 PRINT"[CLEAR]":POKE V+21,0
     :POKE S+4,16:END'GNMF
5000 Q=Q+B:PRINT"[HOME,RIGHT8,SPACE7,
     LEFT7]";Q;:POKE V,47:POKE V+1,229
     :B=B+15'IYQO
5005 POKE V+21,PEEK(V+21)OR 1:'FLHH
5010 POKE S+4,16:FOR A=1144 TO 1903
     :POKE A,32:NEXT A:'HXEH
5015 DN=DN-1:IF DN<=2 THEN DN=3
     :B=B-15'JRMN
5020 FOR A=1144 TO 1899 STEP(DN+4)
     :FOR Y=1 TO 4:POKE Y+A,81:NEXT Y
     :NEXT A'MDCM
5100 POKE 1020,0:POKE S+4,17
     :RETURN'ENUD
8000 REM  ***************************
     ***'BFWF
8010 FOR Y=1 TO 15 STEP 2:POKE V+Y,229
     :NEXT Y:POKE V,47:POKE V+2,90
     :POKE V+4,126'MHBP
8020 POKE V+6,165:POKE V+8,203
     :POKE V+10,244:POKE V+12,29
     :POKE V+14,66'KKOP
8025 POKE V+16,192'CHWJ
8030 FOR Y=2040 TO 2047:POKE Y,192
     :NEXT Y:POKE V+39,0
     :FOR Y=40 TO 46'KEEP
8035 POKEV+Y,6:NEXT Y'CLCM
8040 POKE V+21,255'CHSG
9000 REM  ***************************
     ***'BFWG
9010 FOR Y=12288 TO 12350:READ Z
     :POKE Y,Z: NEXT Y'GTQK
9011 FOR Y=12352 TO 12414:READ Z
     :POKE Y,Z: NEXT Y'GTJL
9012 FOR Y=12416 TO 12478:READ Z
     :POKE Y,Z: NEXT Y'GTUM
9013 FOR Y=12480 TO 12542:READ Z
     :POKE Y,Z: NEXT Y'GTNN
9014 FOR Y=12544 TO 12606:READ Z
     :POKE Y,Z: NEXT Y'GTPO
9015 FOR Y=12608 TO 12670:READ Z
     :POKE Y,Z: NEXT Y'GTRP
9020 DIM A(37):FOR Y=0 TO 37:READ A(Y)
     :NEXT Y'GRUK
9025 FOR Y=49152 TO 49382:READ Z
     :POKE Y,Z: NEXT Y'GTFQ
9999 Y=PEEK(V+31):RETURN'EHXH
10000 REM  *************************
      ***'BEFV
10010 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0'BLWD
10011 DATA 0,0,28,0,0,56,0,0,112,0,0,
      224,0,0,112,0,0,56,0,0,28,0,0,
      56,0'BKRE
10012 DATA 0,112,0,0,224,0,0'BRQW
10020 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0'BLWE
10021 DATA 0,0,56,0,0,112,0,0,224,0,0,
      112,0,0,56,0,0,28,0,0,56,0,0,
      112,0'BLJF
10022 DATA 0,224,0,0,112,0,0'BRQX
10030 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0'BLWF
10031 DATA 0,0,112,0,0,224,0,0,112,0,
      0,56,0,0,28,0,0,56,0,0,112,0,0,
      224'BKMA
10032 DATA 0,0,112,0,0,56,0,0'BSNY
10040 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0'BLWA
10041 DATA 0,0,224,0,0,112,0,0,56,0,0,
      28,0,0,56,0,0,112,0,0,224,0,0,
      112'BKMB
10042 DATA 0,0,56,0,0,28,0,0'BRVA
10050 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0'BLWB
10051 DATA 0,0,112,0,0,56,0,0,28,0,0,
      56,0,0,112,0,0,224,0,0,112,0,0,
      56,0'BLJC
10052 DATA 0,28,0,0,56,0,0'BPEB
10060 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0'BLWC
10061 DATA 0,0,56,0,0,28,0,0,56,0,0,
      112,0,0,224,0,0,112,0,0,56,0,0,
      28,0'BKRD
10062 DATA 0,56,0,0,112,0,0'BQVC
10100 REM  *************************
      ***'BEFW
10110 DATA 120,4,160,4,200,4,240,4,24,
      5,64,5,104,5,144,5,184,5,224,5,
      8,6'BLGF
10120 DATA 48,6,88,6,128,6,168,6,208,
      6,248,6,32,7,72,7'BSDC
12001 DATA 160,0,177,251,141,19,3'BWMX
12002 DATA 162,39,200,177,251,136,
      145'BBPA
12003 DATA 251,202,240,8,230,251,
      208'BAAB
12004 DATA 243,230,252,208,239,173,
      19'BBRC
12005 DATA 3,200,145,251,96,160,
```

```
           39'BXSC
12006 DATA 177,251,141,19,3,136,
           177'BYUE
12007 DATA 251,200,145,251,136,208,
           247'BCIF
12008 DATA 173,19,3,145,251,96,
           173'BXEF
12009 DATA 252,3,240,3,76,49,234'BVVA
12010 DATA 173,0,220,41,15,73,15'BVHX
12011 DATA 240,51,74,144,3,206,1'BVJY
12012 DATA 208,74,144,3,238,1,208'BWUA
12013 DATA 74,144,20,206,0,208,
           173'BXMB
12014 DATA 0,208,201,255,208,26,
           173'BYHD
12015 DATA 16,208,41,254,141,16,
           208'BYJE
12016 DATA 208,16,74,144,13,238,0'BWRE
12017 DATA 208,208,8,173,16,208,9'BWDF
12018 DATA 1,141,16,208,173,1,208'BWJA
12019 DATA 201,230,144,3,206,1,
           208'BXAB
12020 DATA 201,39,208,3,141,252,3'BWJY
12021 DATA 172,0,208,173,16,208,
           41'BXOA
12022 DATA 1,208,9,192,24,176,12'BVUB
12023 DATA 238,0,208,208,7,192,83'BWBC
12024 DATA 144,3,206,0,208,173,31'BWID
12025 DATA 208,240,39,173,21,208,
           41'BYKF
12026 DATA 254,141,21,208,169,47,
           141'BAOA
12027 DATA 0,208,169,229,141,1,
           208'BXRA
12028 DATA 78,21,208,208,10,169,
           49'BXEB
12029 DATA 141,20,3,169,234,141,
           21'BXGC
12030 DATA 3,173,31,208,173,31,
           208'BXOA
12031 DATA 76,49,234,120,169,55,
           141'BYXC
12032 DATA 20,3,169,192,141,21,3'BVKC
12033 DATA 88,96,234,234,234,234,
           234'BACE
15000 POKE S+4,16:PRINT"[CLEAR,DOWN5,
           RIGHT10]TIME=";C:PRINT"[DOWN,
           RIGHT10]SCORE=";Q'ELUB
15005 PRINT"[DOWN3,RIGHT4]
           FINAL SCORE= (SCORE-(TIME /
           100))"'BAHE
15010 PRINT"[DOWN5,RIGHT10]
           FINAL SCORE=";:Q=INT(Q-(C/100))
           :IF Q<0 THEN Q=0'JRYF
15015 PRINT Q'BBIC
15050 PRINT"[DOWN2,RIGHT5]
           PRESS SPACE BAR TO PLAY AGAIN!";
           'BBCE
15060 PRINT"[HOME,PURPLE,DOWN2,
           RIGHT15]WORM XING"'BARB
16000 GET PO$:IF PO$=""THEN 16000'EMJC
16010 IF PO$=" "THEN RUN'EDFB
16020 PRINT"[CLEAR]";:END'CCIB
```

END

by Roy L. Denio



Pare A Phrase

A word guessing game of memory and chance for the Commodore 64.

Can you pare (whittle down) your opponent(s) secret phrase? Pare A Phrase will require a fair memory, some strategy, and a bit of luck. Two to four players type a secret phrase that will be covered, or hidden, with blank boxes. The object of the game is to reveal an opponent's phrase by guessing the letters in it. Scores will be awarded for each letter guessed plus a bonus if you can guess the entire phrase. The game is ended by the program when only one player's phrase remains at least partially covered. Difficulty is set by a variety of menu options. By choosing the (optional) 'mock program errors' you can add more scoring a bit of luck to the game. Select invisible spaces if you want to make it harder to discern individual words that make up the phrase.

When the program is run the menu screen will appear. First select the number of players. The next prompt will be for visible or invisible spaces. Invisible spaces will appear as blank boxes just like the hidden letters although they do not have to be guessed. You will then be asked to choose how you want the letters revealed. In other words, if a phrase has four t's in it, you can have them all revealed on a correct guess, or just one, leaving the rest for subsequent guessing. Last on the menu is mock program errors. This is sort of like drawing a chance card. Results of the mock error will momentarily be flashed in the center of the block of the player who is presently at turn. Chances are slightly better of the error being in your favor. Approximately a 56%/44% good to bad ratio. Select no errors, errors at player option, or random errors. Player option errors will occur only at the beginning of a turn and only if the player chooses by hitting the '/'. Random errors will occur randomly and also at the beginning of a players turn and will average one in four turns. Print errors expose one of a player's unknown letters. Scoring glitch errors will alter your score plus or minus five, ten, or twenty points. Array errors will give whoever is at turn twenty points from one of the opponent's scores. Variable mix-up errors will grant an extra turn or cause you to loose a turn.

After the last menu selection is made the screen will blank while the playing area is set up. Blanking allows a faster setup time and it looks better to have the completed screen appear.

Color coding is used throughout the game to avoid confusion. Green will indicate the player presently at turn. Yellow indicates which player is being interrogated. Red is used for players not presently involved in play. When the screen appears the first block will be green with a prompt for the first player's name. Type in your name and hit RETURN. The prompt will now be for your secret phrase. While the other players look away from the screen (or leave the room if not trustworthy) type in your secret phrase. A minimum length will be indicated for the phrase and a RETURN will be ignored if your phrase is too short. Use upper case letters only and no punctuation of any kind. The delete key is all you have for editing, so be careful and be sure of your spelling before hitting RETURN. After properly completing the phrase, hit RETURN and the phrase will be covered with blank boxes. A few notes will sound letting opponents know it is safe to look at the screen again. Now the next playing block will turn green ready for another player. Play will begin automatically when all players have completed their phrase.

The first player is picked at random by the program. This person's block will turn green. (It will momentarily turn purple if the random error option is in effect while results of the error are flashed on your playing block. If you choose the program errors at player option, now is the time to initiate it. Just hit the '/' and hope for a good one. If this option has not been chosen, or you do not wish to use it, then pick the player you intend to interrogate. Just hit the corresponding number. (No RETURN needed.) Passing is also allowed by hitting zero instead of an opponent's number. If you have already passed two consecutive times, you will be informed to make another choice. Only two consecutive passes are allowed. More on passing later.

The interrogated player's block will now turn to yellow while the program waits for you to select a letter as your guess. Again just hit the letter without a RETURN. This letter will momentarily be displayed above the phrase informing other players of your choice. If your guess is incorrect you are penalized five points and five points are awarded to the interrogated player. An incorrect guess will end your turn as well. When your turn ends your block goes to red and the next player's block turns green. Just one exception. If you have been granted an extra turn your block returns to green instead of the next player's. You must take your extra turn, that is you cannot save it for later in the game. A correct guess is worth from five to forty points based roughly on common usage with the vowels worth the least amount. You will continue at turn until you miss, or you use the pass option.

Guessing an entire phrase is allowed only if the phrase has six or more letters still hidden. Hit the "@" instead of a letter and the cursor will appear allowing you to type in the phrase. Use care, again you only have the delete key for editing. When through, hit RETURN and the program will compare it to the opponent's phrase. If correct you will receive not only the letter values for the remaining letters still covered, but also a 100 point bonus. Be careful though; a wrong guess will cost you 100 points and end your turn. A slick opponent can alter a popular phrase to trick you.

Now, about using the pass option. Seemingly not too useful at first, it does become useful as the game goes on. With good players, and fancy words, the incorrect guessing can become prevalent at times. Remember an incorrect guess costs you five points and awards five to whomever you are interrogating.

Use four players when you can. You will have more to choose from and the game will be more exciting. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

Pare A Phrase

```
110 DIM L(4,28),TL(28),VL(26),M(17),
    SC(4),CL(4),TP(4),N$(4),P$(4)'BHFI
120 LN$="[HOME,DOWN24,RIGHT28]"'BDUD
130 FP$="[YELLOW,RVS,SPACE28,RED]
    "'BDJD
```

```
135 F1$="[RVS,SPACE28]"'BDWH
140 F2$="[RVS,SHFT J,SHFT C]NAME
    [SPACE22]"'BDLF
145 F3$="[RVS,SHFT U,SHFT C]PHRASE
    [SHFT C2]>[SHFT C2]MIN[SHFT C]>
    [SHFT C,SHFT I,SPACE8]"'BDNQ
150 B1$="[RVOFF,GRAY3,SHFT B,RVS,
    SPACE2,RED]":B2$="[RVS,GRAY3,
    SPACE2,RVOFF,SHFT B,RVS,RED]"
    :RE$=" REDO[SPACE21]"'DLBN
160 B4$="[GRAY3,RVOFF,SHFT B,RVS,
    SPACE38,RVOFF,SHFT B]"'BDBK
170 PRINT CHR$(147):S=54272
    :FOR I=S TO S+24:POKE I,0:NEXT
    :POKE S+24,31'LFYP
180 PL=0:POKE 53280,5:POKE 53281,5
    :POKE 646,0:POKE 53272,21
    :PRINT CHR$(8)'HNHP
190 GOSUB 6050:FOR I=1 TO 26
    :READ VL(I):NEXT:FOR I=1 TO 17
    :READ M(I):NEXT'LCPQ
200 PRINT"[CLEAR,DOWN,RIGHT4]
    NUMBER OF PLAYERS (2 TO 4)"'BAME
210 PRINT"[RIGHT4,DOWN2]
    1 SPACES VISIBLE"SPC(24)"2 SPACES
    CONCEALED"'CDKI
220 PRINT"[RIGHT4,DOWN2]
    1 ONE LETTER REAVEALED PER
    GUESS"'BAUH
230 PRINT"[RIGHT4]2 ALL LETTERS OF
    GUESS REAVEALED"'BAEI
240 PRINT"[RIGHT4,DOWN2]
    1 MOCK PROGRAM ERRORS AT RANDOM
    *"'BARJ
250 PRINT"[RIGHT4]2 MOCK PROGRAM
    ERROR PLAYER OPTION"'BAJL
260 PRINT"[RIGHT4]3 NO MOCK PROGRAM
    ERRORS"'BASJ
270 PRINT"[DOWN3]* MOCK PROGRAM
    ERRORS WILL ALTER SCORE,"'BACO
280 PRINT"[RIGHT2]GRANT EXTRA TURN OR
    LOOSE TURN, OR MAY[SPACE2]
    EXPOSE A LETTER.[SPACE2]";'BBLU
290 PRINT"IF OPTIONAL HIT THE[SPACE3]
    / TO SIMULATE ERROR BEFORE
    PLAYING"'BADU
300 PRINT"[RIGHT2,DOWN]
    FAVORABLE/UNFAVORABLE ODDS
    55.6/44.4"'BATH
310 PRINT"[WHITE,HOME]":INPUT NP$
    :NP=ASC(NP$)-48:IF NP<2 OR NP>4
    THEN 310'KYWK
320 PRINT LEFT$(LN$,5):INPUT SP$
    :SP=ASC(SP$)-49:IF SP<0 OR SP>1
    THEN 320'LGBN
330 PRINT LEFT$(LN$,9):INPUT LT$
    :LT=ASC(LT$)-49:IF LT<0 OR LT>1
    THEN 330'LGQO
340 PRINT LEFT$(LN$,14):INPUT RM$
    :RM=ASC(RM$)-49:IF RM<0 OR RM>2
    THEN 340'LHHP
350 IF SP=0 THEN SP$="[RVOFF] "'EGBG
360 IF SP THEN SP$="[RVS,CMDR G]"'DFGH
370 REM ****INITIALIZE SCREEN****'BYTK
380 PRINT"[CLEAR]";:POKE 53280,6
    :POKE 53281,0:POKE 53265,
    PEEK(53265)AND 239'GJBQ
390 PRINT"[RVOFF,GRAY3,CMDR A,
    SHFT C38,CMDR S]"B4$;'BEVO
400 EX=1:F$=F1$:D$=FP$:PRINT"[RED]"
    :FOR PC=1 TO 4:GOSUB 2000:NEXT
    :PRINT B4$;'KHYL
410 PRINT"[RVOFF,GRAY3,CMDR Z,
    SHFT C38,CMDR X]";'BBJG
420 PRINT"[RVS,BLUE,SPACE39]";'BBDF
425 POKE 2023,160:POKE 2023+S,6'DQYK
430 POKE 53265,PEEK(53265)OR 16
    :GOSUB 5000:B1$="[RIGHT3]"
    :B2$="[RIGHT3]"'GDFL
440 FOR PC=1 TO NP:N$(PC)="[YELLOW,
    SPACE9,GREEN]":D$=MID$(LN$,26)
    :F$=F2$:EX=0:PRINT"[GREEN]";'JKOR
450 GOSUB 2000:GOSUB 3000:N$(PC)=M$
    :F$=F3$:EX=2'FDHM
455 PRINT"[GREEN]";:GOSUB 2000
    :GOSUB 3000'DLFM
460 PRINT LEFT$(LN$,PC*5+1)SPC(6);
    'FNRK
465 FOR I=1 TO 28:IF I>LEN(M$)THEN
    PRINT"[RVOFF] ";:GOTO 490'JPPS
470 L(PC,I)=TL(I):IF ASC(MID$(M$,I,
    1))=32 THEN PRINT SP$;'HEKQ
480 IF ASC(MID$(M$,I,1))<>32 THEN
    PRINT"[RVS,GRAY3,CMDR G]";
    :CL(PC)=CL(PC)+1'JCST
490 NEXT:P$(PC)=M$'CJEK
500 F$=F1$:PRINT"[RED]";:GOSUB 2000
    :GOSUB 6000:NEXT'FSDF
600 REM ****MAIN PROGRAM LOOP****'BXKG
610 PL=INT(NP*RND(TI))+1'FLIH
620 PL=PL+1-ET:IF PL>NP THEN PL=1:EX=1
    :ET=0'JXCO
630 M$="":IR=0:PT=0:ET=ET-1
    :IF ET<0 THEN ET=0'JXVO
640 IF RM=0 THEN GOSUB 7000'EHHI
650 G=0:IF CL(1)+CL(2)+CL(3)+CL(4)-CL
    (PL)=0 THEN 1000'IJQR
660 PC=PL:PRINT"[GREEN]";:GOSUB 2000
    :IF PT=1 THEN PC=PL:PRINT"[RED]";
    :GOSUB 2000:GOTO 620'KFTT
670 GET A$:IF A$=""THEN 670'EIML
680 IF RM<>1 THEN 710'EGDL
690 IF IR=0 AND A$="/"THEN IR=1
    :GOSUB 7020'HNDQ
700 IF PT=1 THEN PC=PL:PRINT"[RED]";
    :GOSUB 2000:GOTO 620'HSRJ
710 PQ=ASC(A$)-48:IF PQ<0 OR PQ>NP OR
    PQ=PL THEN 670'KXCO
720 IF PQ=0 AND TP(PL)<2 THEN PC=PL
    :PRINT"[RED]";:GOSUB 2000
    :TP(PL)=TP(PL)+1:GOTO 620'LOCT
730 IF PQ<1 THEN M$="TWO CONSECUTIVE
    PASSES ONLY":GOSUB 7180
    :GOTO 670'GOFS
740 IF CL(PQ)=0 THEN 670'DKYJ
```

```
750 PRINT"[UP3,RIGHT6]I INTERROGATE
    "N$(PQ)'BGHO
755 TP(PL)=0:PC=PQ:PRINT"[YELLOW]";
    :GOSUB 2000'ETAS
760 GET A$:IF A$=""THEN 760'EIML
770 K=ASC(A$):IF K<64 OR K>90 THEN
    760'HPEP
780 IF K<>64 THEN 810'EGCM
790 GOSUB 4000:IF M$=P$(PQ)THEN
    650'EQYP
800 PC=PL:PRINT"[RED]";:GOSUB 2000
    :GOTO 620'EPNH
810 PRINT"[WHITE]"LEFT$(LN$,
    PQ*5-1)SPC(17)CHR$(K);
    :FOR T=1 TO 500:NEXT'KYLO
820 ES=LEN(P$(PQ)):N=INT(ES*RND(0))+1
    :TS=0:BS=N:GOTO 850'KHFS
830 BS=1:ES=N:TS=TS+1:IF TS>1 AND G=0
    THEN 880'JWDQ
840 IF TS>1 AND G THEN 920'EHAK
850 IF BS>ES THEN 830'DHUK
860 IF L(PQ,BS)=K THEN
    SC(PL)=SC(PL)+VL(L(PQ,BS)-64):G=1
    :GOTO 900'IRLX
870 BS=BS+1:GOTO 850'DJXN
880 GOSUB 6120:SC(PL)=SC(PL)-5
    :SC(PQ)=SC(PQ)+5:PC=PL
    :PRINT"[RED]";:GOSUB 2000'ITIA
890 GOTO 920'BDKM
900 CL(PQ)=CL(PQ)-1:PRINT"[RVOFF,
    WHITE]"LEFT$(LN$,PQ*5+1)SPC(5+BS)
    CHR$(L(PQ,BS));'JOOS
910 GOSUB 6140:L(PQ,BS)=32
    :IF LT THEN 870'EVHL
920 PC=PQ:PRINT"[RED]";:GOSUB 2000
    :IF G THEN 650'FQFL
930 GOTO 620'BDHH
1000 REM ****END OF GAME
     ROUTINE****'BYNY
1010 PC=PL:PRINT"[RED]"
     :GOSUB 2000'DKNX
1020 PRINT LEFT$(LN$,28)"[WHITE,RVS,
     SPACE8]G A M E[SPACE3]O V E R
     [SPACE9]";'CJUD
1030 GOSUB 5000:PRINT LEFT$(LN$,28)"
     [RVS,SPACE6]PLAY AGAIN (Y OR N)
     ?[SPACE4]";'DOKH
1040 GET A$:IF A$=""THEN 1040'EJCB
1050 IF A$="N"THEN 1090'DGWB
1060 IF A$<>"Y"THEN 1040'EGAD
1070 RESTORE'BAOA
1080 FOR I=1 TO 4:CL(I)=0:TP(I)=0
     :SC(I)=0:N$(I)="":P$(I)="":NEXT
     :GOTO 150'KQSQ
1090 PRINT"[CLEAR]GOODBYE! "
     :FOR I=1 TO NP-1:PRINT N$(I);" ";
     :NEXT:PRINT"& "N$(NP)'IWVP
1100 POKE S+24,0:POKE 646,1
     :PRINT CHR$(9):END'GQCB
2000 REM ****REPRINT PLAYER
     BLOCK****'BBIB
2010 F5$=LEFT$(F1$,15-LEN(N$(PC))-
     (EX=0)*2)'HAFF
2015 F6$=LEFT$(F1$,5-LEN(STR$(SC(PC)))
     )'FUFH
2020 PRINT LEFT$(LN$,(PC*5)-2)B1$"
     [RVS] [SHFT U,SHFT C30,SHFT I]
     "B2$;'ETUC
2030 PRINT B1$"[RVS] [SHFT B] ";
     N$(PC)F5$PC"[LEFT] SCORE
     :"SC(PC)"[LEFT] "F6$" [SHFT B]
     "B2$;'BDWJ
2040 PRINT B1$"[RVS] [SHFT B] ";F$;"
     [SHFT B] "B2$;'BLAC
2050 PRINT B1$"[RVS] [SHFT B] "D$"
     [SHFT B] "B2$;'BJFD
2060 PRINT B1$"[RVS] [SHFT J,SHFT C30,
     SHFT K] "B2$;:RETURN'CIVC
3000 REM ****SCREENED INPUT
     ROUTINE****'BDVC
3010 POKE 198,0:Y=1:M$=""
     :PRINT LEFT$(LN$,(PC*5+EX)-1)SPC
     (6)"[RVS,YELLOW]";
     :GOSUB 6140'KJSK
3020 POKE 204,0:GET A$:IF A$=""THEN
     3020'FPRD
3030 POKE 204,1:K=ASC(A$)
     :IF K=32 AND TL(Y-1)=32 OR K=32
     AND Y=1 THEN 3020'NHJN
3040 IF(K>64 AND K<91)+(Y<29 AND
     EX>0)+(Y<10 AND EX=0)+(K=32)<>-2
     THEN 3060'SJFS
3050 PRINT A$;:TL(Y)=K:Y=Y+1
     :GOTO 3020'FTLH
3060 IF K=20 AND Y>1 THEN PRINT"
     [LEFT2] [LEFT]";:Y=Y-1
     :GOTO 3020'JPGM
3070 IF(K=13)+(EX>0 AND Y>20)+(EX=0
     AND Y>1)=-2 THEN PRINT" ";
     :GOTO 3090'PCMR
3080 GOTO 3020'BECE
3090 IF TL(Y-1)+EX=34 THEN PRINT
     LEFT$(LN$,PC*5+(EX-1))SPC(6)RE$;
     :GOTO 3010'MKOT
3100 FOR I=1 TO Y-1:M$=M$+CHR$(TL(I))
     :NEXT:PRINT"[RVOFF]";:RETURN'KUQH
3130 PC=PL:PRINT"[GREEN]";:GOSUB 2000
     :RETURN'EMSE
4000 REM ****EVALUATE PHRASE
     GUESS****'BCCD
4010 IF CL(PQ)<6 THEN 4090'DLEB
4020 PC=PQ:GOSUB 3000:PC=PL'DOND
4030 IF M$<>P$(PQ)THEN
     SC(PL)=SC(PL)-100:GOSUB 6100
     :PRINT"[RED]";:GOTO 4090'JKSM
4040 FOR I=1 TO LEN(P$(PQ))
     :IF L(PQ,I)=32 THEN 4070'HYDJ
4050 SC(PL)=SC(PL)+VL(L(PQ,I)-64)
     :GOSUB 6140'EFYK
4055 PRINT LEFT$(LN$,PQ*5+1)SPC(5+I);
     'GORN
4060 PRINT"[RVOFF,WHITE]";CHR$(L(PQ,
     I));:PRINT"[PURPLE]";
     :GOSUB 2000'ESPJ
4070 NEXT'BAED
4080 CL(PQ)=0:SC(PL)=SC(PL)+100
     :PRINT"[GREEN]";:GOSUB 2000
     :GOSUB 6050'GKOP
4090 PC=PQ:PRINT"[RED]";:GOSUB 2000
```

```
      :RETURN'EMVK
5000  REM ****REM GAME TUNE****'BTZC
5020  POKE S+5,0:POKE S+6,240
      :POKE S+3,8:POKE S+22,128
      :POKE S+23,241'KHMM
5030  READ A:READ B:READ C
      :IF A=-1 THEN RETURN'IIBG
5040  POKE S,A:POKE S+1,B:POKE S+4,65
      :FOR T=1 TO C:NEXT:POKE S+4,64
      :GOTO 5030'MFVP
6000  REM ****SOUND EFFECTS****'BUDD
6010  POKE S+5,0:POKE S+6,240
      :FOR I=1 TO 10 STEP 3:POKE S,M(I)
      :POKE S+1,M(I+1)'MION
6020  POKE S+4,33:FOR T=1 TO M(I+2)
      :NEXT:POKE S+4,32:NEXT'KVOK
6030  IF PC<>NP6040'DIIE
6035  POKE S,143:POKE S+1,10
      :POKE S+4,33:FOR T=1 TO 400:NEXT
      :POKE S+4,32'LFUT
6040  GOTO 6150'BEJD
6050  POKE S+5,0:POKE S+6,240
      :FOR I=1 TO 6:ON I GOTO 6070,
      6070,6080,6090,6080,6090'JVXR
6060  POKE S,LO:POKE S+1,HI:POKE S+4,33
      :FOR T=1 TO D:NEXT:POKE S+4,32
      :NEXT'MDER
6065  GOTO 615'BDLK
6070  LO=195:HI=16:D=100:GOTO 6060'EUGM
6080  LO=31:HI=21:D=100:GOTO 6060'ETYM
6090  LO=30:HI=25:D=300:GOTO 6060'ETEN
6100  POKE S+5,0:POKE S+6,240
      :FOR I=13 TO 17:POKE S,M(I)
      :POKE S+1,3:POKE S+4,33'MKHO
6110  FOR T=1 TO 250:NEXT:POKE S+4,32
      :NEXT:GOTO 6150'ISPI
6120  POKE S+5,0:POKE S+6,240:POKE S,71
      :POKE S+1,6:POKE S+4,33'JCBM
6130  FOR T=1 TO 300:NEXT:POKE S+4,32
      :GOTO 6150'HREJ
6140  POKE S+5,15:POKE S+6,249
      :POKE S,151:POKE S+1,126
      :POKE S+4,33:POKE S+4,32'LMBR
6150  RETURN'BAQE
7000  REM ****MOCK ERROR
      ROUTINE****'BYJF
7010  CH=INT(4*RND(0))+1
      :IF CH<>PL THEN M$=""
      :GOTO 7200'LVXL
7020  PC=PL:PRINT"[GRAY1]";:GOSUB 2000
      :M=INT(9*RND(0))+1'IUYL
7030  ON M GOTO 7040,7050,7060,7070,
      7080,7090,7100,7110,7150'CUUL
7040  M$="SCORING GLITCH[SPACE2,
      L. GREEN]+10 POINTS"
      :SC(PL)=SC(PL)+10:GOSUB 6140
      :GOTO 7180'FCXT
7050  M$="SCORING GLITCH[SPACE2,
      L. GREEN]+20 POINTS"
      :SC(PL)=SC(PL)+20:GOSUB 6140
      :GOTO 7180'FCAU
7060  M$="SCORING GLITCH[SPACE2,
      L. GREEN]+30 POINTS"
      :SC(PL)=SC(PL)+30:GOSUB 6140
      :GOTO 7180'FCCV
7070  M$="SCORING GLITCH[SPACE2,RED]
       -5 POINTS":SC(PL)=SC(PL)-5
      :GOSUB 6120:GOTO 7180'FBWV
7080  M$="SCORING GLITCH[SPACE2,RED]
      -10 POINTS":SC(PL)=SC(PL)-10
      :GOSUB 6120:GOTO 7180'FCXX
7090  M$="VARIABLE MIXUP[SPACE2,
      L. GREEN]EXTRA TURN":ET=1
      :GOSUB 6050:GOTO 7180'EQLV
7100  M$="VARIABLE MIXUP[SPACE2,RED]
      LOOSE TURN":PT=1:GOSUB 6100
      :GOTO 7180'EQPN
7110  M$="PRINT ERROR [RED]
      LETTER EXPOSED":LE=INT(LEN(P$(PL)
      )*RND(0))+1'HTLR
7120  IF L(PL,LE)=32 THEN 7110'DOIH
7130  GOSUB 6100:PRINT"[WHITE,RVOFF]
      "LEFT$(LN$,PL*5+1)SPC(5+LE)CHR$
      (L(PL,LE));'IFLP
7140  L(PL,LE)=32:CL(PL)=CL(PL)-1
      :GOTO 7180'EEUN
7150  M$="SUBSCRIPT ERROR [L. GREEN]
      +20 FROM":PP=INT(NP*RND(0))+1
      :IF PP=PL THEN 7150'JWKX
7160  GOSUB 6140:SC(PL)=SC(PL)+20
      :SC(PP)=SC(PP)-20'FJRR
7170  PC=PP:PRINT"[RED]";:GOSUB 2000
      :M$=M$+STR$(PP)'GUVP
7180  FOR I=1 TO 5:PRINT"[WHITE,RVS]
      "LEFT$(LN$,PL*5)SPC(6)M$;
      :FOR T=1 TO 500:NEXT'LAKU
7190  PRINT SPC(14)"[UP]"F1$;
      :FOR T=1 TO 100:NEXT:NEXT'HPLQ
7200  PC=PL:PRINT"[GREEN]";:GOSUB 2000
      :RETURN'EMSG
8000  DATA 10,20,20,20,10,30,20,30,10,
      40,30,20,30,20,10,30,40,20,20,20,
      10'BMBM
8010  DATA 30,30,40,30,40,12,7,300,233,
      7,100,97,8,300,12,7,400,244,187,
      134'BNCN
8020  DATA 83,35,195,17,100,31,21,200,
      181,23,100,0,0,100,156,26,200,31,
      21'BMKO
8030  DATA 100,0,0,100,181,23,200,156,
      26,100,0,0,100,49,28,300,0,0,100,
      239'BNNP
8040  DATA 19,100,239,19,200,31,21,100,
      0,0,100,181,23'BRLM
8045  DATA 200,239,19,100,0,0,100,31,
      21,100,239,19,100'BSJR
8050  DATA 31,21,100,181,23,100,156,26,
      200,210,15,200,-1,-1,-1'BBOP
8060  DATA 31,21,300,195,16,300,24,14,
      150,195,16,450,0,0,150,31,21,
      300'BJCR
8070  DATA 195,16,300,209,18,150,209,
      18,450,0,0,150,31,21,300,195,16,
      300'BLOT
8080  DATA 96,22,150,96,22,450,0,0,150,
      96,22,150,31,21,150,195,16,
      150'BIFT
8090  DATA 209,18,150,210,15,150,195,
      16,450,-1,-1,-1'BQWR
```

END

by Mark Jordan

The 128 Mode

Big League Baseball, Part 2

Explore the Commodore 128 in its powerful native mode. Some of the articles in this column may be technical, some not to technical — but we guarantee that they will spark your creativity.



ED SAUK

Oh how time changes things. When we last talked I told you that this month you'd get the completion to Big League Baseball. But between that time and the present something strange happened — Big League Baseball got bigger. And better. The trouble is, now you'll need a third installment to get it all.

But don't be dismayed, I think once you get this chunk of code keyed in, you'll be in baseball heaven. You'll be able to juggle lineups, pinch-hit, bunt, intentionally walk hitters, steal bases, let pitches go by for called balls or strikes, ground into double-plays, view batter's and pitcher's stats, and best of all, you'll get to watch the game in action. I even added an original musical score.

You'll note that there is not one but three (awk!) listings included. Now pay attention: the instructions are going to get explicit.

1) Type in listing 2 first and save it (call it "Listing2"). Then run it. It will take a while to complete its busy work (over two minutes) so you can go get a soda. When it's done, you'll have a sequential file on your disk entitled "Flight Data." This will be used during the program to let you watch the fly balls fly.

2) Next type in listing 3. This is your sprite data (not to be confused with Flight Data). Save this (name it "Listing3"). Now run it. When it's done you'll have two more files on disk — "Players1" and "Players2." These will be loaded by the main program also when it runs.

3) Finally, you're ready for the listing entitled "Big League Baseball — Installment #2." But wait! Don't type it in yet. Instead, load the program from installment #1 into your computer. Now you can begin typing. Save it, of course, when you're done typing.

As you type you may realize that you are typing over some of the lines you typed in installment #1. That's what you're supposed to do. These new lines will replace those and will allow the enhancements of this edition to work.

Don't worry about memorizing which direction does what —it is printed on the screen just above the batter.

What's New

The first new thing you'll notice is that the program does more chores before you can begin. It has to load four files from the disk drive.

Next you'll note a more colorful screen and a happy tune. You still have the same four options. Since I'm assuming you already have some teams typed in (and if you don't, you know how to do so with the help of last month's column), let's choose Play.

There. You've loaded two teams, you've set two lineups, and now you're ready to begin. Voila! Nine intense players appear on the field. Let's PLAY BALL.

Needed: One Joystick

You won't be able to do anything until you plug a joystick into port 2. While this can easily be a two-player game, only one joystick is needed. The batter will control it at all times. When the person on offense is ready to hit, he simply presses the fire button and the pitcher will begin his wind. When the pitch comes across homeplate fire again — unless you want to "take" the pitch for a called ball or strike.

The person on offense will use the joystick not only to hit but also to select from four options prior to hitting: 1) Pinch-hit, 2) Bunt, 3) Steal, and 4) Clear previous choices. Move the joystick up to pinch-hit, down to bunt, left to steal and right to clear.

Don't worry about memorizing which direction does what —it is printed on the screen just above the batter. You will need to remember that for any of these functions to operate, you must press the fire button.

For example, if you wish to bunt, move the joystick down (south) and, while holding it there, fire. A grunting sound will tell you that you've made the decision (in fact, if you hold the button you'll hear a bunch of grunting sounds...but that's no problem). Now move your joystick back to straight up and press the button. The pitcher will kick and fire.

For the bunt option to work properly, keep in mind that you still must fire at the ball when it comes by. By the way, I wouldn't advise bunting for basehits as they're rare. But for sacrifices, it's a great maneuver.

The steal option works the same. Of course, you must have runners on base. The lead runner is the one who will be gunned down so keep in mind that his speed is the critical factor. Remember, you typed in a numerical equivalent for each player's speed. It's listed on the screen when they bat...but once they're on base, you must assign it to memory. Also remember, for a steal to work, you must let

the pitch go by. The pinch-hit option works the same. Push up and fire. This time you'll leave the diamond and be back at the lineup screen. You may cycle through your available players just as when you set the lineup.

Finally, the "clear" option (push right and fire) simply takes off the bunt or steal signal.

You may be thinking, "Hey, if the computer grunts when I choose to steal, then the other guy'll notice and I'll have no secrets." Good observation — almost. You're deductive weakness lies in two areas: 1) your opponent can't do much about it except walk you, and 2) he won't know if you're stealing, bunting, or clearing. Fake him out just like they do in the Majors: give him a "non" sign by clearing when there's nothing to clear.

Big League Defense

If you're starting to pity the man on defense, don't. He'll get his chance to bat soon enough. Besides, he does have three options each pitch: 1) to change pitchers, 2) to intentionally walk a batter, and 3) to view his pitcher's statistics. He makes his choices via the keyboard: C - change pitchers, W - walk batter, and S - view statistics. This is printed on the screen as a constant reminder.

Since the offensive player controls when the pitch is to be delivered (it's done this way so that you can play solitaire without having to drop the joystick then pick it up again really fast), he must allow the defense to select whatever options he might want. Therefore, it's good etiquette to say prior to each pitch, "Are you ready, Smithers" or whatever your buddy's name is. To which he'll respond, if he's a refined gentleman, "Yes I am, Witherspoon. You may proceed." If you forget to allow some time for Smithers to press some keys, he has a very mean weapon at his disposal — the joystick...which you must hand him at the change of at-bats. In other words, you may share the same fate.

A List of Bewares!

As you play, you'll learn to know the personality of this program quite well. You may wonder about why some things happen like they do. Here's a list of explanations to questions you haven't asked yet but may:

1) You can walk even if you swing at a pitch. This is because the game is meant to be statistical in nature, not arcade-like.

2) Steals, bunts, and double-plays all are calculated based on player speed. You may decide your initial speed calculations were too strict or too loose. Feel free to use the Update Option to re-edit.

3) If you pinch-hit for a pitcher, at the time you'll simply select a hitter. When the inning is over you'll be required to select another pitcher. You may place the pitcher in any spot in the lineup, thus allowing your pinch-hitter to stay in the game.

4) Last month I mentioned that you could make up a league of "Great Yankee Teams." Well, you can, but you'll need to change the data in lines 290-320 to different names.

5) The ability to sort and save individual and team records, a ballpark effects factor and explanations of several crucial sections of code (to help you modify) will be forthcoming in next month's column. And, of course, there will be more little extras that as yet have not jumped into the right hemisphere of my brain.

But let's not dwell on the future...the present is too soon slipping by us. And there are bunts to bunt and bases to steal and lots of Big League Baseball to play. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30007, Shreveport, LA 71130-0007, 1-800-831-2694.

Big League Baseball — Installment #2

```
30 DIM SP$(18):BLOAD"PLAYERS1"
   :FOR T=Ø TO 7:SPRSAV T+1,SP$(T)
   :NEXT'IATM
40 BLOAD"PLAYERS2":FOR T=Ø TO 7
   :SPRSAV T+1,SP$(T+8):NEXT'ISGL
50 FOR T=1 TO 8:READ X(T),Y(T),DI(T),
   SD(T),PT,A:MOVSPR T,X(T),Y(T)
   :SPRSAV SP$(A),T:NEXT'HEUS
60 DATA 156,189,41,2,57,9, 202,134,
   27Ø,3,56,8, 88,134,221,2,56,8, 3Ø,
   19Ø,9Ø,3,48,Ø, 1Ø5,17Ø,,,5Ø,2, ,,,,
   ,1Ø, 18Ø,122,,,53,11, 118,126,,,53,
   5'BAOB
62 GSHAPE SP$(5),Ø,Ø:SSHAPE SP$(17),Ø,
   Ø,23,15:SSHAPE SP$(18),Ø,16,23,
   2Ø'DWOQ
64 DIM F(1Ø,3):FOR T=1 TO 1Ø
   :FOR I=1 TO 3:READ F(T,I):NEXT
   :NEXT'KARR
66 DATA 7,Ø,154,6,156,138,6,18Ø,113,
   17,168,72,18,168,88,17,11Ø,72,18,
   11Ø,88, 5,18Ø,2Ø,5,28Ø,45,6,265,
   13Ø'BUOB
82 SCNCLR'BAGG
182 DRAW Ø,96,88 TO 19Ø,88'CNMJ
23Ø DIM TM$(4,7),HO$(1,25,6),HO(1,25,
   6),PL(1,1Ø),RE$(18),IN$(1,6),
   FL$(2Ø),FL(2Ø),AX(14),BX(14),
   RB(3),SV(8),SO$(3)'BFJV
24Ø FOR T=Ø TO 18:READ RE$(T)
   :NEXT'FMKF
25Ø DATA "[SHFT P]OPUP","[SHFT F]
   LYOUT","[SHFT F]LYOUT","[SHFT L]
   INEOUT","[SHFT L]INEOUT","[SHFT G]
   ROUNDOUT","[SHFT G]ROUNDOUT","
   [SHFT S]TRIKEOUT","[SHFT S]INGLE",
   "[SHFT D]OUBLE","[SHFT T]RIPLE","
   [SHFT H]OMERUN","[SHFT W]ALK","
   [SHFT E]RROR"'BNXO
251 DATA"[SHFT D]OUBLEPLAY","[SHFT B]
   UNT","[SHFT S]TOLEN BASE","
   [SHFT C]AUGHT!","[SHFT O]
   OPS!"'BECQ
252 FOR T=Ø TO 7:READ GR(T):NEXT'FKBI
254 DATA 89,8Ø,5Ø,65,93Ø,113Ø,75Ø,
   111Ø'BEGL
256 FOR T=Ø TO 14:READ AX(T),BX(T)
   :NEXT'FREN
258 DATA 4,Ø,3,4,3,4,7,7,7,7,,,,,,,2,
   14,2,16,Ø,18,Ø,19,1,2Ø,,,,'BEFT
372 FOR T=1 TO 21:READ A$,B$
   :C$=C$+"V1"+A$+"V2"+B$:NEXT'KUOR
374 DATA O4QE,C,F,D,G,E,O5WC,O4G,QB,F,
   O5C,O4G,A,F,WG,WE'BVFT
375 DATA O4Q#F,Q#D,G,E,#F,#D,WD,O3B,
   O4QG,D,A,E,G,D,WE,C'BVWU
376 DATA QD,O3B,O4D,O3B,O4QE,C,D,O3B,
   O4WC,O3G'BLKT
378 V1$="V1T4":V2$="V2T4"
   :SO$(Ø)=V1$+V2$+LEFT$(C$,126)
```

```
    :SO$(1)=LEFT$(C$,90)
    :SO$(2)=MID$(C$,127)
    :SO$(3)=V1$+V2$+LEFT$(C$,63)'OCAO
382 DOPEN#2,"FLIGHT DATA"'BEQL
383 FOR T=0 TO 19:INPUT#2,FL$(T)
    :NEXT'FOWN
384 DCLOSE:FL$(20)=CHR$(0)'DMTN
386 FOR T=0 TO 20:READ FL(T):NEXT'FLMQ
388 DATA 1,1,1,1,1,2,2,3,3,2,3,2,3,3,
    2,2,2,2,2,2,'BPSU
485 GOSUB 4000'BEFM
500 FOR T=1 TO 7:CHAR 1,1,T,"[SPACE10]
    ",1:NEXT'FNNG
502 COLOR 1,9:CHAR 1,2,10,"
    [SHFT POUND]P[CMDR *]",1
    :CHAR 1,2,11,"S+C",1
    :CHAR 1,2,12,"[CMDR *]
    [SHFT POUND]":CHAR 1,3,12,"B",1
    :CHAR 1,2,13,LC$+"JOY"'HCAW
504 COLOR 1,5:CHAR 1,15,0,LC$+"
    [SHFT W]=WALK[SPACE2,SHFT C]
    =CHANGE[SPACE2,SHFT S]=STATS"'DOMQ
550 COLOR 1,3:FOR T=0 TO 8
    :CHAR 1,0,T,"[SPACE12]",1
    :NEXT'GRWN
662 IF PK=1 THEN GOSUB 3300:PK=0'FLKN
693 COLOR 0,1:COLOR 1,HH+7:MO=0'ENBS
694 FOR T=1 TO 10:IF T>3 THEN COLOR 1,
    6:COLOR 0,HH+7:MO=1'KUEY
695 IF T=5 OR T=7 THEN COLOR 0,1
    :COLOR 1,HH+7:MO=0'JRQY
696 GSHAPE SP$(F(T,1)),F(T,2),F(T,3),
    MO'BDUV
697 NEXT'BAEQ
698 PLAY "V1T0"+SO$(3)'CHFV
720 COLOR 1,3:CHAR 1,3,8,LC$+"[SHFT O]
    UTS"+STR$(OU-1),1'GUUN
732 IF RE=17 THEN 750'DHBJ
770 : GOSUB 2339: REM PITCH'CLQL
772 SPRSAV SP$(2),5:SPRSAV SP$(0),
    4'CTFP
774 IF RE=17 THEN EXIT'EEHP
776 IF C1>0 OR C2>0 THEN 750'FJPT
802 RE=0:FOR T=1 TO 3:RB(T)=0
    :NEXT'GPHL
882 IF J2=1 THEN GOSUB 3070
    :GOTO 940'FLVR
935 IF LEN(L$(H))=NP(H)THEN 1080'EQBR
972 Z=0'BCJN
1010 IF K<9 OR J2=1 THEN
     L$(H)=L$(H)+CHR$(T)'ISGD
1054 IF J2=1 THEN RETURN'EDFF
1062 L$(H)=L$(H)+CHR$(T)'DNRF
1064 IF PK=2 THEN RETURN'EDMG
1102 Z=Z+1:IF Z>24 THEN PRINT"[SHFT N]
     ONE AVAILABLE":SLEEP 1
     :GOTO 1200'IPPJ
1132 IF PK=2 AND HO$(H,T,1)<>"[SHFT P]
     "THEN 1100'GRRH
1134 IF PK=1 AND HO$(H,T,1) ="[SHFT P]
     "THEN 1100'FRTI
1670 V$(0)=" [L. BLUE] NEW TEAM. "
     :HH=0'CJLM
2030 UD=1:H=0:HH=0:V$(H)=" [SHFT U]
     PDATE TEAM"'EQMH
2122 PA=PA+GF(HH)'CKKC
2160 P2=PL(H,PL):IF P2=P(H)THEN BA=.1
     :WB=.025:PO=.005:SB=5
     :PO$="[SPACE4]":HR$="[SPACE3]"
     :AB$="[SPACE3]":BA$=" .100"
     :WK$="[SPACE3]":GOTO 2240'OOSC
2295 CHAR 1,1,7,LC$+"[SHFT S]
     PEED"+STR$(SB)+" ",1'FPCS
2320 S$="":DO'CDCB
2322 GET J$:J2=JOY(2):IF J$<>""THEN
     GOSUB 3600:GOTO 2322'JUHK
2324 IF J2<128 THEN 2332'DJWG
2326 J2=J2 AND 127:IF J2=0 THEN
     EXIT'GLTL
2328 SOUND 1,2000,1'BIKJ
2330 ON J2 GOSUB 3000,3270,3270,3270,
     3200,3100,3100,3100'CQGJ
2332 LOOP:SOUND 1,15000,1'CKAF
2336 RETURN'BAQG
2339 SPRSAV SP$(3),5:SLEEP 1
     :SPRSAV SP$(4),5'DWVQ
2340 SPRITE 6,1,2,0:SPRITE 7,1,1,0
     :MOVSPR 6,120,180:MOVSPR 7,120,
     190:MOVSPR 6,249#5
     :MOVSPR 7,249#5'GHEQ
2344 J=JOY(2):IF RSPPOS(6,
     0)<20 THEN BEGIN:MOVSPR 6,0#0
     :SPRITE 6,0:SPRITE 7,0'KGVS
2348 :IF RND(1)<.5 THEN C1=C1+1
     :ELSE C2=C2+1'JRKS
2350 :IF C1=4 THEN RE=11:TB=1:S$=""
     :GOTO 2560'HUXL
2352 :IF C2=3 THEN RE=7:TB=0:S$=""
     :GOTO 2540'HTHM
2354 :CHAR 1,5,22,LC$+"[SHFT C]OUNT
     :"+STR$(C1)+" -"+STR$(C2)'HTIR
2356 :IF S$="STEAL"THEN RE=16:TB=0
     :GOTO 2560'GQFR
2358 :BEND:GOTO 2610'CHUM
2360 IF J=0 THEN 2344'DGRG
2370 T=RSPPOS(6,0):MOVSPR 6,0#0
     :MOVSPR 7,0#0'EVDL
2380 SPRSAV SP$(1),4'BJNH
2390 TB=0:BI=ABS(T-50):IF BI>12 THEN
     RE=7:GOTO 2560'JYQR
2450 IF R3<.05 THEN RE=12:TB=1
     :GOTO 2540'GSIK
2480 BEND:GOTO 2540'CGOI
2540 IF S$="BUNT"THEN RE=15:TB=0'FKXJ
2560 ON RE+1+TB GOSUB 2850,2850,2850,
     2850,2850,2890,2890,2970,2630,
     2630,2630,2630,3500,2630,2890,
     3220,3120'EOYA
2564 SPRITE 6,0:SPRITE 7,0:COLOR 1,15
     :CHAR 1,5,22,LC$+LEFT$(RE$(RE+TB)
     +SP$,12)'IROY
2572 IF S$<>"STEAL"THEN C1=0:C2=0'GJNP
2580 CHAR 1,31,22+H,SC$,1'COBL
2590 SLEEP 1:CHAR 1,5,22,"[SPACE12]
     "'CKIN
2630 IF RE+TB<>13 THEN GOSUB 2850
     :ELSE GOSUB 2890'IPFL
2635 R=0:FOR T=1 TO TB:SOUND 1,25000,
     9,0,150,9000,1'FFGR
```

```
2640 B1=1:B2=4:GOSUB 2810'DMXI
2672 IF RSPRITE(4,Ø)=1 THEN SPRITE 4,Ø
     :SPRITE 1,1'GQSQ
2680 GOSUB 2840:GOSUB 2790:NEXT'DKAL
2700 IF RE=15 THEN SPRITE 1,Ø'EIOF
2732 B1=2:B2=3:GOSUB 2810
     :GOSUB 2840'ERRM
2734 RB(3)=RB(2)'BKYK
2780 :'ABHJ
2790 RB(3)=RB(2):RB(2)=RB(1):RB(1)=SB
     :SB=Ø'EIPU
2800 RETURN'BAQC
2810 FOR I=B1 TO B2:MOVSPR I,
     DI(I)#SD(I):NEXT'FVPK
2820 FOR J=1 TO 700:NEXT'EGOH
2830 RETURN'BAQF
2840 FOR I=1 TO 4:MOVSPR I,Ø#Ø
     :MOVSPR I,X(I),Y(I):NEXT
     :RETURN'HADQ
2850 FL=INT(RND(1)*AX(RE+TB))+BX
     (RE+TB)'HXUR
2852 Y=208:Y1=10:IF FL>13 THEN
     Y1=Ø'GRAQ
2854 Y2=Ø:IF TB=4 THEN Y2=60'FLWQ
2856 SL=LEN(FL$(FL)):UY=ASC(RIGHT$
     (FL$(FL),1))+Y2+Y1:UL=Y-UY
     :US=UL/SL'LTGG
2860 US=US*FL(FL)'CKJM
2870 FOR I=1 TO SL STEP FL(FL)
     :MOVSPR 6,I*2+50,ASC(MID$(FL$(FL)
     ,I,1)):Y=Y-US:MOVSPR 7,I*2+51,Y
     :NEXT'PAHF
2880 RETURN'BAQK
2890 FOR X=1 TO 5:MOVSPR 6,50+X,203+X
     :MOVSPR 7,52+X,214-X:NEXT'KDJX
2900 GR=INT(RND(1)*4)'EIJH
2910 XX=GR(GR+4):IF RE+TB=13 THEN
     XX=XX+250'IXKP
2920 MOVSPR 6,GR(GR)#3:MOVSPR 7,
     GR(GR)#3:FOR X=1 TO XX:NEXT
     :MOVSPR 6,Ø#Ø:MOVSPR 7,Ø#Ø'ISGU
2930 IF RSPRITE(1,Ø)=1 AND OUT<3 THEN
     BEGIN'HMFN
2940 :IF RND(1)>.7 THEN 2960'EKSL
2950 :IF INT(RND(1)*9)+1>SB THEN
     SPRITE 1,Ø:OU=OU+1:RE=14'LALV
2960 :BEND'BCFK
2970 RETURN'BAQK
3000 KK=P3(H):DK=KK'CMQY
3010 GOSUB 3090'BENW
3020 IF PL(H,KK)=P(H)THEN P(H)=Ø
     :PK=1'FVUF
3030 GOSUB 870:GRAPHIC 1'CFQA
3040 GOSUB 2160:GOSUB 2240
     :GOSUB 3095'DOYD
3060 RETURN'BAQB
3070 FOR T=1 TO 9:CHAR 1,H*20+2,T+2,
     " "+LEFT$(HO$(H,PL(H,T),Ø)+SP$,
     12)+HO$(H,PL(H,T),1),1:NEXT
     :CHAR 1,H*20,KK+2,"[SHFT *]
     >"'PSMD
3080 RETURN'BAQD
3090 FOR T=1 TO 6:SV(T)=RSPRITE(T,Ø)
```

```
    :SPRITE T,0:NEXT:RETURN'IWUO
3095 FOR T=1 TO 6:SPRITE T,SV(T)
    :NEXT'FNPP
3097 COLOR 4,1:RETURN'CENN
3100 S$="STEAL":RETURN'CDKY
3120 SS=0:FOR T=1 TO 3:IF RSPRITE(T,
    0)=1 THEN SX=T'JSMI
3130 SS=SS+RB(T):NEXT:IF SS=0 THEN
    RE=18:GOTO 3170'IXIJ
3140 B1=1:B2=3:GOSUB 2810'DMWE
3150 R=RND(1)*9+2:IF R>SS-SX THEN
    SPRITE SX,0:RE=17:COLOR 1,3
    :GOTO 3160'MGLQ
3155 IF SX=3 THEN RU(H)=RU(H)+1'FOGM
3160 FOR T=3 TO 1 STEP-1
    :IF RSPRITE(T,0)=1 THEN SPRITE T,
    0:SPRITE T+1,1'MWIO
3165 NEXT:GOSUB 2840'CFXJ
3170 RETURN'BAQD
3200 S$="BUNT":RETURN'CDUA
3220 MOVSPR 6,50,210:R=RND(1)*30
    :MOVSPR 6,55+R#1:SLEEP 1
    :MOVSPR 6,0#0'IKFM
3225 R3=18:IF RSPRITE(3,
    0)=1 THEN R3=31'GQLL
3230 IF R>11 AND R<R3 OR OU>2 THEN
    RE=6:GOTO 3260'JRUK
3240 IF R<2 OR R>28 THEN TB=1
    :RE=7'HMJI
3250 GOSUB 2635'BERD
3260 RETURN'BAQD
3270 S$="":RETURN'CDPF
3300 GOSUB 3090:GRAPHIC 0,1:COLOR 4,3
    :COLOR 0,11'ERTE
3310 PRINT"[HOME2,CLEAR,BLACK,RVS]
    [SHFT C]URSOR UP/DN TO SELECT
    PITCHER'S SLOT[SPACE2]"'BAIM
3320 PK=2:KK=1:DK=9:H1=H:H=HH
    :GOSUB 3070'GYGJ
3330 DO:GET KEY A$:IF A$=CHR$(13)THEN
    EXIT'IKQJ
3335 CHAR 1,H*20,KK+2,"[SPACE2]"'DKGK
3340 IF A$="[DOWN]"THEN GOSUB
    3400'EGXF
3350 IF A$="[UP]"THEN GOSUB 3420'EGXH
3360 CHAR 1,H*20,KK+2,"->"'DKBI
3370 LOOP'BAKF
3380 DK=KK:GOSUB 940:SLEEP 1:H=H1
    :GOSUB 3095:GRAPHIC 1'GWKP
3390 RETURN'BAQH
3400 KK=KK+1:IF KK>DK THEN KK=1'GNPG
3410 RETURN'BAQA
3420 KK=KK-1:IF KK<1 THEN KK=DK'GNSI
3430 RETURN'BAQC
3500 PRINT"[BELL]";:SPRITE 4,0'CGTC
3510 IF RSPRITE(3,0)=1 AND RSPRITE(2,
    0)=1 AND RSPRITE(1,
    0)=1 THEN RU(H)=RU(H)+1
    :RB(3)=RB(2)'NSVS
3520 IF RSPRITE(2,0)=1 AND RSPRITE(1,
    0)=1 THEN SPRITE 3,1
    :RB(2)=RB(1)'JEKN
3530 IF RSPRITE(1,0)=1 THEN SPRITE 2,
    1'FLPI
3540 SPRITE 1,1:RB(1)=SB'CMQI
3550 RETURN'BAQF
3600 IF J$="W"THEN RE=11:TB=1
    :GOSUB 2560:GOSUB 2110
    :GOSUB 2240'IAGL
3610 IF J$="C"THEN R=INT(RND(1)*5)
    :GF(HH)=(R-2)/8:GOSUB 3300'LBKP
3620 IF J$="S"THEN BEGIN'EDMG
3630 :JS=(JS+1)AND 1:JH=P2:JI=0
    :IF JS=HH THEN JH=P(HH):JI=1'KJFT
3640 :COLOR 1,11:CHAR 1,1,1,
    LC$+LEFT$(HO$(JS,JH,0)+SP$,10),
    1'FMOQ
3650 :FOR T=1 TO 6:CHAR 1,1,T+1,
    LC$+LEFT$(LEFT$(IN$(JI,T)+SP$,
    5)+" "+HO$(JS,JH,T)+SP$,10),1
    :NEXT'NELB
3660 :BEND'BCFI
3670 RETURN'BAQI
4000 TEMPO 35:FOR T=0 TO 2
    :PLAY"V1T0"+SO$(T):NEXT
    :RETURN'IRWG
```

Listing 2

```
10 FAST:DIM PR$(19)'CJYA
20 FOR T=0 TO 19:X=50:Y=203
   :READ H,K,XN:A=((Y-K)/(X-H)^2)'LIYM
30 FOR I=X TO XN STEP 2
   :Y=A*(I-H)^2+K'JOPI
40 PR$(T)=PR$(T)+CHR$(Y)'DPMF
50 NEXT:NEXT:SLOW'DDFD
60 DOPEN#2,"FLIGHT DATA",W'BGRH
70 FOR T=0 TO 19:PRINT#2,
   CHR$(34)+PR$(T):NEXT'HSSL
80 DCLOSE'BBNF
90 DATA 122,90,193,138,90,215,104,90,
   140,144,90,204,164,50,215,214,50,
   315,180,90,302'BBAU
100 DATA 170,195,192,180,170,215,250,
    100,142,300,120,204,230,78,214,
    390,100,315,210,180,302'BHSL
110 DATA 168,180,270,200,105,200,245,
    105,340,195,55,260,290,80,315,390,
    55,345'BSKJ
```

END

Listing 3

```
10 FOR T=0 TO 511:READ A$
   :POKE 3584+T,DEC(A$):NEXT'IUQG
12 BSAVE"PLAYERS1",B0,P3584 TO
   P4096'CPCG
14 FOR T=0 TO 127:READ A$
   :POKE 3584+T,DEC(A$):NEXT'IUTK
16 FOR T=128 TO 511:POKE 3584+T,0
```

```
   :NEXT'GQYK
18 POKE 3712,192:POKE 3715,192
   :POKE 3776,112:POKE 3779,224'EKHO
2Ø BSAVE"PLAYERS2",BØ,P3584 TO
   P4Ø96'CPDF
22 DATA 7Ø,,,98,3C,,FC,B6,,5E,DF,FF,
   2F,7Ø,,17'BMKI
24 DATA ØF,8Ø,ØB,BF,CØ,Ø7,DE,,Ø1,EC,,,
   E6,,Ø1,3Ø'BOVK
26 DATA ,Ø3,9B,,Ø7,65,8Ø,Ø7,F6,,,Ø8,,,
   FE,'BIFL
28 DATA Ø1,E7,,Ø1,83,,Ø1,Ø2,,Ø1,Ø7,8Ø,
   Ø1,CØ,,'BMJN
3Ø DATA ,2B,,,5D,8Ø,,DD,8Ø,,CØ,4Ø,,1F,
   EØ,'BIFG
32 DATA 47,FØ,,78,8Ø,,3F,8Ø,,ØE,,,31,
   8Ø,,6E'BKHI
34 DATA 8Ø,,76,8Ø,,79,,,3F,FØ,,Ø1,B8,,
   3C,F8'BKEK
36 DATA ,3B,3Ø,,3Ø,CØ,,6Ø,7Ø,,CØ,3E,
   Ø1,FØ,,'BKIM
38 DATA ,3E,,,7B,,,2F,,,FØ,,Ø1,E7,,
   'BCKM
4Ø DATA ØF,,,3F,,,12,,,Ø7,8Ø,,ØB,4Ø,,
   1B'BGDG
42 DATA 4Ø,,1B,4Ø,,1B,,,2B,CØ,,62,EØ,,
   8B,AØ'BKPJ
44 DATA ,CD,4Ø,,ØA,,,Ø9,8Ø,,1B,8Ø,,77,
   ,'BGPK
46 DATA ,,,,,F8,,ØE,EC,,Ø7,7C,Ø7,,6C,
   Ø7'BGKM
48 DATA 87,8Ø,ØB,C3,F8,ØD,31,FØ,Ø2,ØB,
   8Ø,,64,CØ,,F1'BSYR
5Ø DATA CØ,,DD,AØ,Ø1,8F,AØ,ØF,Ø7,7Ø,
   Ø6,Ø6,38,,Ø7,18'BSEK
52 DATA ,Ø7,ØE,,Ø6,ØE,,Ø2,Ø4,,Ø6,,,1E,
   ,'BGLJ
54 DATA ,,,,,,,,,Ø7,8Ø,,ØD,CØ,,ØF'BAQK
56 DATA 6Ø,,Ø3,EØ,,3C,,,7B,EØ,,Ø7,8Ø,,
   Ø2,3Ø'BKBO
58 DATA ,,78,,Ø1,5C,,Ø3,2C,,ØC,33,,18,
   17,8Ø'BKWQ
6Ø DATA 3Ø,36,8Ø,28,33,,,18,8Ø,,18,CØ,
   ,71,EØ,'BMOJ
62 DATA ,ØE,,,3F,,,7F,,,1F,,Ø1,EØ,,
   Ø7'BEDK
64 DATA C7,,,3D,,,FE,,,38,,,CE,,Ø1,
   DF'BEMM
66 DATA ,Ø3,77,,Ø3,7B,,Ø6,7A,,Ø7,23,
   8Ø,ØB,F4,8Ø'BOQQ
68 DATA Ø7,87,8Ø,ØE,Ø7,4Ø,ØA,,CØ,ØA,,
   AØ,3E,Ø1,CØ,'BQQS
7Ø DATA ,ØD,8Ø,,1F,CØ,,6F,CØ,Ø3,FØ,,
   Ø1,CE,CØ,'BMBL
72 DATA 3D,8Ø,,1F,,,19,CØ,,Ø6,EØ,,ØF,
   6Ø,,ØF'BKSM
74 DATA 6Ø,,ØE,EØ,,1C,4Ø,,6B,EØ,Ø1,F3,
   EØ,Ø2,A7,8Ø'BQNP
76 DATA Ø1,4F,6Ø,,ØE,EØ,,ØA,6Ø,,ØA,5Ø,
   ,3E,FØ,'BMUQ
78 DATA ,,,,,,,,,,,,ØF,,,1F'BTEP
8Ø DATA 8Ø,,3F,,,3F,8Ø,,1F,ØC,,Ø7,9E,,
   3C,BE'BKOL
82 DATA ,7C,26,,FE,14,,EF,3Ø,,F7,EØ,,
   F9,CØ,'BKLN
84 DATA 5E,3Ø,,1F,BØ,,Ø4,6Ø,,18,CØ,,
   1D,EØ,,'BKIP
86 DATA ,34,,,7A,,,2E,,Ø1,FØ,,Ø3,CE,,
   'BEVQ
88 DATA 3C,,,1B,,,Ø7,8Ø,,7D,CØ,,DE,EØ,
   Ø1,CE'BKNT
9Ø DATA 3Ø,Ø3,88,1C,ØE,Ø2,,,1F,,,3F,
   8Ø,,79,CØ'BMKM
92 DATA ,6Ø,4Ø,,3Ø,8Ø,,1Ø,8Ø,,29,CØ,,
   7Ø,,'BIKN
94 DATA ,1E,,,3F,,,5F,,,7Ø,,C5,,
   Ø3'BCTO
96 DATA 3F,,,1E,,,18,8Ø,,Ø2,6Ø,,Ø7,6Ø,
   ,ØE'BIYR
98 DATA EØ,Ø3,FD,EØ,,F9,1Ø,,Ø1,FØ,,Ø3,
   EØ,,Ø7,8Ø'BOAV
1ØØ DATA ,ØF,4Ø,,ØA,CØ,,Ø4,6Ø,,ØE,6Ø,,
    3E,,'BIQB
```

END

by Graham Kinsey

Amiga Public Domain Update

What's new for the Amiga in the public domain? Here are some of the more recent public domain programs for the Amiga.

This month I have reviewed over fifty new Amiga public domain programs, including programs from Fish disks 66 thru 80, and AMICUS disks 17 thru 20. Without a doubt, the most important program this month is GOMF. All Amiga users are sick and tired of losing running programs and data to the dreaded Guru Meditation alert, and anything that can stop this terrible syndrome deserves a round of applause! For each program the author is given, and if that PD program is available on the Fish series or the AMICUS series of public domain disks, the number of each series is given before the description. In many cases, more than one disk will be listed in each series for a given public domain program; this means that an update to the mentioned public domain program has been released, and is also available on one of the mentioned disks in the series. I do not keep track of which programs are available on PeopleLink here since virtually all of the programs mentioned in this column will be available for download in the libraries in the Amiga Zone on PeopleLink (if not by the time I write this, then certainly by the time this column is published). When a public domain program has been classified as shareware, this is also mentioned, with the suggested amount.

Assigned: by Dan Green (Fish 66)
This program will tell you whether a name you input identifies an AmigaDOS mounted disk (one that has been inserted into one of the drives) or if it is a device or if it might be an assigned directory. This program is case sensitive.

Flip: by Mike Berro (Fish 66)
Another graphics display hack. The name says it all!

Free: by Tom Smythe (Fish 66)
Free tells you how much free Chip and Fast memory you have available. Free also tells you how much free space is available in each of your floppy or hard disks or alternative memory disks (for example VD0:) that you may be running.



ED SAUK

GOMF (short for Get Outa My Face) is used to give you a chance to try to recover your Amiga when you get a dreaded GURU message.

Purty: by Charles Tyson (Fish 66)
Purty lets you change some printer setting without having to go to Preferences. You can change margins, spacing and print quality to name a few. Purty does not alter your Preference settings that are on disk.

Bouncer: by Jon R. Bryan (Fish 67)
Written in Forth, this graphics demo displays a shaded ball bouncing around in a three-dimensional room.

HexCalc: by Scott Ross (Fish 67)
This small calculator can operate in binary, octal and hexadecimal in addition to regular decimal. There are function buttons for boolean operations. Unfortunately all input must be done via the mouse; you can not input via the keyboard.

PersMait: by Breen and Associates (Fish 67; Shareware: $24)
PersMait is an extremely simple home file manager program. It supports mail merge, and it produces files that are compatible with *Scribble!'s* mail merge feature. The freely distributable version of this program is effectively a demo version; most of the menu options are disabled. This forces you to send in the shareware fee if you want to use the program.

BlitLab: by Tomas Rokicki (Fish 69; AMICUS 20)
With this program you can perform operations with the Amiga's blitter. You are allowed to operate on an area of 96 bits wide by 32 rows long. Whenever you are about to attempt an operation that is unsafe and may crash your Amiga, BlitLab will warn you. This program has no menus, and all choices are made via gadgets. Please note that this program (and the documentation) assumes that you already have a working knowledge of the Amiga's blitter.

Frags: by Mike Meyer (Fish 69)
Gives you a rough idea of how fragmented your memory is by telling you the number of pieces of memory that fall within each of 24 pre-defined size ranges.

Sb: by Nick Williams and Chris Zamara (Fish 69)
Allows you to view all data structures of any task running in memory. This can be a valuable aid if you want to try to examine how a program works but don't have the source code. This program and all the data it looks at are updated while Sb is still running. For example, if you're looking at the data of one of the bitplanes of a program's window, and you resize the window, the data will change if you look at it again. Some comments are provided to help you understand what the various structures and related data mean.

Spew: by Gregory Smith (Fish 69)
If you ever thought of starting your own tabloid based on sensationalism, this program could take a lot of work out creating ridiculous headlines. Spew creates *National Enquirer*-style headlines. Not only can you immediately start generating headlines with the default rules given, but you

can also create your own rules. The rules allow you to input possible persons, objects, places and even enter possible scenarios for randomly creating eye-catching headlines.

Wc: by Steve Summit (Fish 69)

Counts the number of lines, words, characters, and/or pages in a text file. You can input a non-standard page length if desired.

Blackbook: by Craig Nelson
(Fish 70; Shareware: $30)

Here is a very compact program that acts as a simple database for names and addresses. It only takes up one quarter of the screen.

DoTil: by Dan Franki
(Fish 70; Shareware: $15)

In the style of the DirUtil programs that have been floating around the Amiga public domain world, this program has two windows for directories like DirUtilX and specializes in copying files from one disk device to another. Unlike most DirUtil-type programs, DoTil does have a menu in addition to gadgets. You can use DoTil's command input gadget to execute commands that aren't included within the DoTil program (although all output of such a command will appear in the CLI window instead of the DoTil window).

JoBS: by John Sawaya (Fish 70)

When you first look at this program, you may think that it's just another DirUtil-type program. But JoBS has one very important feature that most DirUtil-type programs don't have; JoBS is almost completely programmable! By writing a custom definition file, you can tailor JoBS to best suit your needs. JoBS has 28 command gadgets that can be programmed via the definition file to call up any CLI or Workbench based program you like. When you write the definition file, you can specify whether any command gadget will require parameter input, which JoBS will then allow you to input if you select that command gadget. If this isn't enough, JoBS also has ten programmable storage device gadgets. In addition to the 28 programmable command gadgets, JoBS has over a dozen different fixed command gadgets which give you many basic CLI commands, including Run, Copy, Rename, Execute and Makedir. For those DirUtil fans who have been looking for a programmable DirUtil program, JoBS may suit you just fine!

Vpg: by Mike Berro
(Fish 70; AMICUS 18)

Aids in the centering and positioning of a monitor's display. Many standard graphics can be brought up, including a dot field, crosshairs, and horizontal and/or vertical lines. A re-sizable rectangle can be created. Several different colors can be used for the graphics. Vpg operates in the 640 by 400 mode.

Airfoil: by Russell Leighton (Fish 71)

Generates either streamline or pressure plots of the air around a moving airfoil. There are options that can be changed, including the velocity of the airfoil, and the angle of attack. This program utilizes a pop-up menu, and a 16-color hi-res screen for display.

DiskX: by Steve Tibbett
(Fish 71; Shareware: $15)

Allows you to examine many things about a disk. You can search for strings, perform hexadecimal editing, and much more.

Fpic: by Bob Bush
(Fish 71; AMICUS 20)

This is an image processing program. It was designed to work only with lo-res grey scale IFF pictures. It performs many image processing operations, including Sobel and Roberts, averaging, 3x3 matrix operations, histograms, sharpening, and cross operation. It needs 300K of memory to perform at maximum efficiency.

TimeSet: Author unknown (Fish 71)

Here is a handy way to set the system time from the Workbench, without going to Preferences. Proportional gadgets set everything except the year, which is set by two boolean gadgets.

Add: by John Russell
(Fish 73; Shareware: $5)

If you have ever been upset that a programmer didn't include enough keyboard equivalents in his menu options (or ones that you don't like), now you can do something about it. Add allows you to add, or change keyboard equivalents for any menu option in any program that is running at the time. the author also supplies an accompanying program called Until that allows you to tell a startup-sequence file to wait until a particular window has been opened. By using Until, you can easily create a batch file that will customize any program's menus that you load up via the startup-sequence file.

Expose: by John Russell (Fish 73)

For those of you who find that you often have to move many of your windows around just to get access to a screen's drag bar and/or depth arranger gadgets, here's a program that will save you some work. Expose will move all windows down so that at least the top pixel line of a screen's drag bar and depth arranger gadgets are exposed. Expose will shrink a window if it finds that this becomes necessary in order to move it (for example, a window which is the same size as the screen).

Lmv: by Jim Webster
(Fish 73; Shareware: $10)

Lmv will create movies for you, by loading in frames (in the form of IFF pictures), and then display them at a rate of up to 19 frames per second. This program is designed solely for use with extended memory; it will not work with only 512K. There are options for using Lmv, including the delay between each frame and whether you want color cycling to be enabled in each frame.

Mouseoff: by Denny Jenkins
(Fish 73,75)

For those of you who get annoyed by having to move the mouse pointer off your work area, here's a program that will save you a little fustration. Mouseoff will make the mouse pointer disappear if there is no mouse movement for ten seconds. Once the pointer disappears, any movement of the mouse will bring the pointer back into view (but clicking one of the buttons is not enough).

TypeandTell: by Giorgio Galeotti
(Fish 73)

Here is an aid to a blind person, or anyone who wants to hear what they are typing. TypeandTell will tell you much more than simply the letters of the alphabet. You'll hear when you use a control combination, a shift, alt or escape key, a function key, or even one of the Amiga keys.

Cled: by Pat Empleo (Fish 74)

Cled is Similar to Conman (reviewed in the October installment). Cled improves your CLI by adding line editing and command histories to the CLI. Unlike Conman, Cled does not require you to install any custom device drivers. Cled does not have the function key features that Conman .98 does. Cled does allow you to edit CLI commands after they have been inputed, which Conman does not allow. Cled also can let you edit the CLI prompt and change it to another ASCII string or even another color.

Funds: by Bill Strack (Fish 74)

This AmigaBasic program allows you to

track the performance and/or trends of mutual funds or stocks. It contains a full set of Intuition style menus. Data can be saved to disk.

Units: by Gregory Simpson (Fish 74)
With this program you can make units conversions from any one of 20 different unit groups. Once you choose a unit group, you can choose from one of many different scales to compare against other units of measure. You can even create charts that compare two different units.

Bezier: by Matt Dillon (Fish 75)
Here are three programs that let you experiment with Bezier Curves. Two of the three programs let you move any one of four points that define the curves. The other program contains about 20 points that create a 3D Bezier surface. In all three programs you can specify the granularity of the curve or surface being generated. One of the programs has a run-time option to animate the Bezier curve.

Cp: by Jeff Lydiatt (Fish 75)
For those who have installed a battery clock-calendar in their Amiga (or those who don't tire by inputing the date and time everytime they turn on their Amiga), the AmigaDOS copy command can become a real pain. AmigaDOS's copy command does not save the original datestamp of a file when copying it to a new file. Cp is similar to Copy, but Cp will retain the datestamp when a file is copied to somewhere else.

HardCopy: by David Cervone (Fish 75)
If you ever wanted to create a copy of a CLI session, then HardCopy is for you. Hardcopy lets you save all CLI I/O to a file of your choosing, including sending it to RAM:, DF# or DH# file, or even PRT: device while you are still using the CLI. HardCopy will not create a session of any CLI-started program that opens its own Intuition window, but HardCopy will copy the I/O if the window opened is just a standard CON: or RAW: window.

SetFont 2.0: by Dave Haynie (Fish 75)
SetFont will instantly change the default font being displayed. Version 2.0 of SetFont allows you to change only the font of the current CLI or just the title bar of the Workbench, as opposed to version 1.0 of SetFont, which would change the font of all windows and screens.

Cycles: by John Gilmore (Fish 78)
Based on a part of the famous computer movie *Tron*, this game has three different skill levels but is not designed for two players.

EOMS: by Daniel Cardenas (Fish 78)
Aptly named Experts Only Mercenary Simulator, *EOMS* is a very tough public domain game. The object is to stay alive, by using grenades and a rifle to ward off a horde of opposing soldiers. The graphics are good enough for representation purposes, and the action is very fast.
I was able to survive the first four or five rounds, but once the opposition starts hurling grenades at you, it's time to become an EOMS master or else die very quickly!

AssignDev: by Philip Lindsay and Commodore-Amiga (Fish 79)
Lets you assign multiple device names to the same physical device. This could be very handy for those who lack certain devices, like a DH0:, DF1: or a VD0:.

Mounted: by Peter de Silva (Fish 79)
Mounted is used in a startup-sequence to determine if a particular disk has been mounted (inserted). This could be very useful for those who want to combine different startup-sequences into one large batch file with multiple branches.

QueryAny: by Mark Smith (Fish 79)
Another startup-sequence aid, QueryAny lets you program in a simple branch which is conditioned on an answer to a simple yes/no type of question. This is version 2.0 of QueryAny. The first version, version 1.0, was over 15K long, but eventually QueryAny shrunk to a tiny size of 352 bytes in version 2.0.

ScnSizer: by Thad Floryan (Fish 79)
ScnSizer is closely related to MoreRows (which was reviewed in the October installment of this column). ScnSizer, like MoreRows, allows you to use the overscan of your monitor for screen and window display purposes. The major difference between MoreRows and ScnSizer is that while MoreRows takes many steps to perform its magic, all you need to do with ScnSizer is type the command and its parameters for instant effect! Another major difference is that while MoreRows is permanent, ScnSizer does not save anything to Preferences. One argument allowed in ScnSizer that is not allowed in MoreRows is an offset for the display, from the upper left corner.

AmiGazer: by Richard Horne (Fish 80)
A star gazing program, AmiGazer comes with a catalog of over 1500 stars. Color is an option, so are date and time, location and viewpoint. This program does not track the moon and planets, but it will show you the sun if it is in view.

Newdemos: by Steve Koren (Fish 80)
If you ever tried to demonstrate to your friend the multitasking capabilities of the Amiga by running the standard line and box demo programs, you may have been personally less than impressed. Here are new versions of these demos that are rewritten expressly for multitasking. The difference with these demos is that they each only use a tiny percent of the 68000's maximum computational power.

Printext: by Opher Kahane (Fish 80; Shareware: amount not specified)
This program is another text displayer. Printext will actually speak to you the text that is displayed (although the quality of the speech is much poorer that it should be). In addition to text, you can display an IFF picture at any time. There are options for different color foreground/backgrounds and the ability to search for a text string.

Rainbench: by Brendan Keliher (Fish 80)
Like Rainbow (reviewed in the September installment), Rainbench creates rainbow-like colors on your Workbench screen. But unlike Rainbow, Rainbench has some options for you to play with. You can select which of the four Workbench/CLI colors to affect, therefore you can make other things colorful besides the background. Also you can choose from one of three color line thicknesses. Finally, you can choose whether to retain the rainbow color settings, even after you have killed the color cycling part of the program.

ShortCut: by Opher Kahane (Fish 80; Shareware: amount not specified)
ShortCut adds macros, menus and menu options for many of the most used CLI commands. When you want to edit a macro, a separate window will pop up, with string gadgets for editing five macros (out of ten) at a time. Command-key sequences are provided for the AmigaDOS commands that are implemented at menu options. Macros can be saved and then loaded at run-time.

Timer: by Invatronics (Fish 80)
This program is a simple timer, contained in a tiny window.

Txt: by Ray Lance (AMICUS 17)
Will take a text file, and perform certain changes to the text file. It can convert double spacing to single spacing. It can convert linefeeds to carriage returns (or

output both CR and LF). Formfeeds can be removed, re-paragraphing can be performed, and control characters can be discarded. Spaces can be converted into tabs, and vice versa. You can also tell Txt to perform wordwrapping, and Txt will use a page width that you define.

FullWindow: by Andry Rachmat (AMICUS 18)

For those Amiga users that detest using a mouse, FullWindow is a program that will eliminate one more set of mouse movements. FullWindow will resize the CLI window to the full size of the screen it's attached to. It you are running more that one CLI at the time, you can specify which CLI window you want to enlarge.

Rollback: by Andry Rachmat (Shareware: amount not specified)

Creates a text buffer for your CLI. What I mean by this is that Rollback saves a certain number of lines of text that have recently appeared in the CLI window in its own memory-resident buffer. And the result of this is that you can now scroll back on your CLI window and view text that had previously scrolled off the CLI window. Rollback stores the last 100 lines of CLI text; this number is not redefinable.

Target: by Matt Fruin and Michael McCarty

If you would like to add some noise to your mouse pointer, here's one program that might please you. Target transforms your pointer into a small crosshair. When clicked, a digitized sound of a gun firing is heard.

AutoFACC: by Andry Rachmat

This program is intended for use with the commercial product FACC (Floppy ACCelerator). Once you have already run FACC, AutoFACC will automatically move the FACC window to the back and shrink the window. It can also add or subtract the number of buffers that FACC will use.

SpaceAce: by Stephen McLeod (Shareware: $10)

A simple shoot-at-each-other game, SpaceAce allows two players to control small spaceships. The winner of SpaceAce is the first player who destroys his opponent ten times. There are some options to choose from, including gravity (and the gravity field's strength), shot life, inertia, and the number of shots that each player has available for firing.

AMIC PD Term version .42: by David Salas (Shareware: $20)

AMIC version .42 is an update to the program AMIC that I reviewed last month. The main improvement in AMIC .42 is that you can now dial more than one number at the same time. This is especially handy when trying to get on a bunch of bulletin boards that are very busy.

Mkidir: by Donald Wahl

Here's a program that will save some time for those people that use both the CLI and Workbench environments. As opposed to the CLI command Makedir, which just creates a directory, Mkidir will create both a directory and a Workbench drawer icon to go with it. Unfortunately the drawer icon is built into the program, so that you can not use a different drawer icon than the one that comes with the program. The C source code does come with the program, so programmers can edit the code in order to use a different drawer icon.

UD: by Darrin Massena

Another graphics display hack, UD will flip your screen upside down. But UD doesn't freeze the display; it will still allow you to use the display if you want to.

Anim and Anim2: by Allen Hastings and Aegis Development

Here are two stunning animation demos that were created with the soon-to-be-released commercial animation product *VideoScape-3D*. Both feature at least one Fokker biplane circling on the screen. The first animation to appear, Anim, just has one Fokker biplane circling in front of some large titling characters. The second animation to appear in the public domain world, Anim2, has two Fokker biplanes circling in opposite directions. In addition to the extra plane, Anim has a beautiful tiled background, and some multicolored text spelling out the word "VIDEOSCAPE." Anim2 also has a better three dimensional appearance in that both planes cut through the VideoScape word, circling behind part of it, but always in front of the first and last character.

GOMF: by Christian Johnsen (Shareware: $5)

Everybody who starts to use an Amiga will sooner or later become familiar with the dreaded Guru Meditation alert. The fact the the Amiga is a multitasking machine makes a Guru even more dreadful, for if just one program crashes, all your other programs and their memory-resident data can be wiped out when you are forced by the Guru to reboot your Amiga.

But wait a second, now there is a glimmer of hope! GOMF (short for Get Outa My Face) is an error handling program, and it's most obvious use is to give you a chance to try to recover your Amiga gracefully when one program crashes. To use GOMF, you just run the program. GOMF will then go to sleep and only awaken if one of your other programs come the a crashing halt. When you see the "Task Held" requester, select the Cancel gadget as you normally might do. But instead of the Guru showing up next, hopefully you will see GOMF's recovery window. This is the magical sign, that GOMF has more than likely saved you and your other programs from destruction! By following GOMF's instructions, GOMF will then kill the errant program and return you to your Amiga environment as it was before the crash but with errant program gone. When GOMF is first run, it will self-configure itself to the microprocessor that use are using in your Amiga. Either the standard 68000, or a 68010 or even a 68020. One sad point I must bring up is that GOMF cannot help you if a program "locks up" the machine (an example: when using *Scribble,* if you click on two gadgets in rapid succession), or if you never see the "Task Held" requester and instead head straight for the Guru. GOMF comes with several program that simulate many errors that normally crash your machine. In each case I tried, GOMF handled all these errors with no problem whatsoever! For programmers, there is a piece of assembly code which accompanies the GOMF executable, which allows you to link the GOMF program to any program that you are writing so that you can add built-in error handling to your own program (instead of hoping that the user is running GOMF). So if Gurus are getting to you, add GOMF to your Amiga environment, and you can start saying goodbye to the Guru too!

Next month expect more of the same: the best in new Amiga public domain programs. Hopefully I will be as fortunate in receiving new Fish and AMICUS disks as I was this month. Of course there will also be many other new programs that are fresh off the Amiga bulletin boards in next month's column. As always, I can be reached in the Amiga Zone on PeopleLink (ID: G KINSEY), or on the IDCMP BBS (617-769-8444, 8pm-8am). If you have written a public domain/shareware/user supported program or have obtained one that you think is worth mentioning to all Amiga owners, then please attempt to contact me. See you next month. ■

by Tim Jones

AmigaBASIC Tutorial

Part 8: More Requestors

A short program demonstrates difficult areas of AmigaBASIC, offering both tips on confusing areas and tricks to make your life easier. Rather than an article followed by a program, we have combined them for the sake of clarity.



BOB CLARK

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' Last month, we took a look at how to create a
' pseudo-requester by using AmigaBASIC and manual manipulation
' of the location, size and gadget response.  Now, let's look
' at a method that will take advantage of the built-in
' Intuition functions designed specifically to handle
' requesters.

' When using the Intuition requester manager, we need to
' keep in mind how big we want the actual window, what,
' if any, title we want in the display and what to do with
' the returned value.  I will include the necessary SUBs
' to manage these items as well.

DEFLNG a-z
TRUE = 1 : FALSE = Ø : NULL = Ø

LIBRARY "intuition.library"
LIBRARY "exec.library"

DECLARE FUNCTION AutoRequest() LIBRARY
DECLARE FUNCTION AllocMem() LIBRARY

' AutoRequest() is the function that will create and manage
' our requester through Intuition.  It returns a value which
' points to the result of its call (TRUE or FALSE) so we must
' pre-define it to the system so AmigaBASIC doesn't think that
' we are referring to an un-indexed array.  AllocMem() is
' used to set up memory for handling the text that we will be
' displaying.

' The syntax for calling AutoRequest() is:

'     Result = AutoRequest(Window, Message, YesText, NoText,
'                     PosFlag, NegFlag, WIDTH, Height)

' When the user selects a button, Result will contain
' whichever boolean result we assigned to the PosFlag or
' NegFlag variables.  The variables are set as follows:

' Window   -> A pointer to the Window structure (WINDOW(7))
' Message  -> A pointer to the Text of your requester (SADD)
' YesText  -> A pointer to the Text for the YES button (SADD)
' NoText   -> A pointer to the Text for the NO button (SADD)
' PosFlags -> Flag BITS for the IDCMP (we use 1)
' NegFlags -> Flag BITS for the IDCMP (we use Ø)
' Width    -> The Width of the requester in pixels
' Height   -> The height of the requester in pixels

' In this example we use TRUE and FALSE as name variables, and
' assign 1 and Ø to each respectively.  If we then set the
' PosFlags variable to 1 and the NegFlags variable to Ø,
' Result will be equal to TRUE if the left, or positive
' button, is selected or FALSE if the other.  This way, we can
' determine which button the user has selected.

' The Syntax for calling AllocMem() is:

'     Pointer = AllocMem(Size, Type)

' Where Pointer is the address of the memory that was
' allocated (or zero if unable to allocate), Size is the
' number of bytes requested and Type is the type of memory we
' want to use (PUBLIC and CHIP or FAST and CLEAR).  PUBLIC
' requires that a 1 be sent as the type, CHIP requires a 2,
' FAST requires a 4 and CLEAR requires 65536.

' To simplify the calls to the SUB that we will build, we
' will preset string and numeric variables into short-named
' variables before calling the SUB.

' The SUBs that we will use will be called DOReq and SetTit.
' These will perform the appropriate functions for making
' the requesters and changing the title of the windows as the
' requesters will take on the title of the window that they
' are being attached to.

t1$ = "     Full Intuition Requester Example"
t2$ = "     Select either button to continue"
t3$ = "            Put your message here!"

pt$ = " Hey " : nt$ = " That's GREAT "
' The negative text doesn't HAVE to be negative!
pFlag = 1 : nFlag = Ø
w = 35Ø : h = 75 ' You should keep in mind the width of
                 ' the text when you set the w value.

' Set the window title to give the requester a meaningful
' name
  SetTit "Requester Example"
  DOReq t1$,t2$,t3$,pt$,nt$,pFlag,nFlag,w,h

' Let's reset the window title
  SetTit "Intuition Controlled Requesters"

IF Result = TRUE THEN
  PRINT "You chose the left button"
ELSE
  PRINT "You Chose the right button"
END IF

LIBRARY CLOSE
END

SUB DOReq(t1$,t2$,t3$,pt$,nt$,pFlag,nFlag,w,h) STATIC
SHARED Result,NULL

  Size = 18        ' Size of the IntuiText Structure
                   ' This structure contains information used
                   ' by the AutoRequest() function that
                   ' describes the draw parameters, actual text,
                   ' pointers to additional IntuiText
                   ' structures, etc.  We will use the POKE
                   ' functions to build this structure for each
                   ' of our text portions.
  Type = 65539&    ' PUBLIC CHIP memory that has been CLEARed
                   ' (1 + 3 + 65536)
```

```
  t1 = AllocMem(Size,Type) ' First line
  t2 = AllocMem(Size,Type) ' Second line
  t3 = AllocMem(Size,Type) ' Third line
                           ' Add more as needed.  Note that
                           ' the variables are named to
                           ' correspond to the actual string
                           ' variable names

  pt = AllocMem(Size,Type) ' YES button
  nt = AllocMem(Size,Type) ' NO button

' Now, we set up our pens and drawmodes for each line of
' text that we wish to display.  The first is commented, the
' others follow the same rules.

  POKE t1,0       ' Foreground PEN #
  POKE t1+1,1     ' Background PEN #
  POKE t1+2,0     ' Draw Mode
                  ' This combination gives us a reverse field
                  ' requester.
  POKEW t1+4,6  ' The left edge (where text should start)
  POKEW t1+6,4  ' The top edge (how far down).  Note that
                ' this is incremented by 8 for each line of
                ' text as allowance for an 8 point font.  If
                ' you are using a different size font you
                ' should change this increment accordingly.
  POKEL t1+8,0  ' If we wished to use a custom font, we would
                ' open the font via another SUB and place the
                ' resulting font pointer here.

  POKEL t1+12,SADD(t1$ + CHR$(0)) ' point to the actual text
  POKEL t1+16,t2  ' Point to the next line of text or use
                  ' NULL (0) if there are no more.

' This is for line 2

  POKE t2,0 : POKE t2+1,1 : POKE t2+2,0
  POKEW t2+4,6 : POKEW t2+6,13
  POKEL t2+8,0 : POKEL t2+12,SADD(t2$ + CHR$(0))
  POKEL t2+16,t3

' This is for line 3

  POKE t3,2 : POKE t3+1,1 : POKE t3+2,0
  POKEW t3+4,6 : POKEW t3+6,26
  POKEL t3+8,0 : POKEL t3+12,SADD(t3$ + CHR$(0))
  POKEL t3+16,NULL

' This is for the positive button

  POKE pt,0 : POKE pt+1,1 : POKE pt+2,0
  POKEW pt+4,6 : POKEW pt+6,3
  POKEL pt+8,0 : POKEL pt+12,SADD(pt$ + CHR$(0))
  POKEL pt+16,NULL

' This is for the negative button

  POKE nt,0 : POKE nt+1,1 : POKE nt+2,0
  POKEW nt+4,6 : POKEW nt+6,3
  POKEL nt+8,0 : POKEL nt+12,SADD(nt$ + CHR$(0))
  POKEL nt+16,NULL

' Now, call the AutoRequest function

  Result = AutoRequest(WINDOW(7),t1,pt,nt,pFlag,nFlag,w,h)

' Now, we release the memory that we allocated for efficient
' and friendly multitasking!

  FreeMem t1,Size : FreeMem t2,Size : FreeMem t3,Size
  FreeMem pt,Size : FreeMem nt,Size

' We're done!

END SUB

SUB SetTit(Title$) STATIC
  SetWindowTitles WINDOW(7),SADD(Title$ + CHR$(0)), -1
END SUB

' This last SUB is used to change the window title so that our
' requester will be able to display a title that applies to
' what ever it is we're trying to say to the user.

' When you open a requester with the AutoRequest() function,
' it will take on the name that is assigned to the current
' window (our call to WINDOW(7) tells AutoRequest where to
' find this info).  We change the existing window's title
' prior to calling AutoRequest() and our requester will have a
' title that says what we want it to say.  Remember, though,
' that you must make a call to the SetTit SUB when the request
' exits, or the window will have the title that we assigned
' for the display of the requester.

' If you plan on displaying more or fewer lines of text in
' your requester, you should use the appropriate number of
' text variables (t1$,t2$,etc.).  Also, remember that more
' lines of text will require a larger requester to display
' them.  You would change the value of the y variable to make
' this larger.  Also, as I noted above, you would also take
' into account the size of the font you are using when setting
' the x and y variables.
```

END

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```
100 REM CORRECTING INPUT -
    J.CHARNETSKI
110 PRINT"[CLEAR]"
120 INPUT "FIRST NAME";N1$
130 IF PEEK(215)=128 THEN PRINT "
    [CLEAR]SWITCH MONITOR TO 40 COL
    MODE"
150 INPUT "[DOWN]ALL CORRECT (Y OR
    N)";A$
160 IF LEFT$(A$,1)<>"Y"THEN PRINT"
    [HOME]":GOTO 120
170 PRINT:PRINT N1$:PRINT N2$
    :PRINT TN$
```

Sensing special keys: When designing a program that uses keyboard input, it's useful to be able to sense special keys like SHIFT, CTRL and the Commodore logo key. It's really quite easy to do, since there's a memory location that has various bits set depending on which of these keys are pressed.

The location is 653 for the 64 and VIC, 211 for the 128, and 1347 for the Plus/4. When SHIFT is pressed, it contains a 1. When the Commodore logo key is pressed, it contains a 2. And when CTRL (Control) is pressed, it contains a 4.

You can also detect combinations by adding the values. For example, CTRL + SHIFT = 5 and SHIFT + COMMODORE = 3.

Jason Barney
Renton, Washington

Deceptive lines: If you're debugging a program and you encounter Syntax Errors in a line that seems all right, try listing the line by itself. You might get what looks like two lines instead of one. If you do, you've found the bug.

What you're seeing is really a flawed single line produced by a keyboard error. These lines are caused by typing a line exactly as wide as the screen, then typing another without pressing RETURN. To your careless eyes, you've entered two lines. But to the computer, you've only entered one, and it has a line number somewhere in its middle. That line number is what causes the Syntax Error.

You can eliminate the bug by typing both lines again.

Kathleen Mead
Westerville, Ohio

RENUMBER trick: If you have a 128, you can renumber your programs at the flick of the keyboard. If you have a 64 and one of the many good renumbering utilities, you can do the same and sometimes even more. But as soon as you renumber a program, you lose track of the line numbers of important subroutines or other sections of your program.

If you make up some dummy lines like these, it will be easy to find those routines again:

```
100 GOTO 140
110 GOSUB 700 : REM MAIN MENU
120 GOSUB 800 : REM SORT ROUTINE
130 GOSUB 5000 : REM SOUND BEEPER
140 Rest of program goes here.
```

Lines 110-130, of course, will never be executed. But when the program is renumbered, the line numbers in their GOSUB statements will be renumbered, along with the lines themselves. When the renumbering is finished, you can look at these lines to find the new numbers of your valuable routines.

These dummy lines can be anywhere in your program, but at the very beginning is best. If they're there, you can find them in a jiffy. Putting them at the very end of the program keeps them out of the way, but they're a little slower to find.

A. E. Neas
Troy, New York

64 power supply repairs: A frequent cause of computer trouble is some sort of failure inside the external power supply. Some of these supplies are easier to repair than others, but you can always try something if you suspect that yours is defective.

The first thing to do is to isolate the problem to the power supply. The surest way to do this is by borrowing a friend's good power supply and temporarily switching it with yours. If your symptoms continue when the new power supply is connected, the underlying problem is elsewhere in your system. If the symptoms go away, you know that your own power supply is defective.

Before working on your power supply, or on any piece of electrical equipment, you MUST be sure that it's unplugged. With the power plug in sight, examine the power supply to see if it can be disassembled (some of them have screws for this purpose). WARNING: Opening the power supply will void your warranty. Remove the screws and carefully disassemble the supply. When it's open, carefully check the glass fuse inside. Usually a visual examination can tell if the fuse is blown, but only an ohmmeter test can tell for sure. If the fuse is blown, replace it with one of identical rating. Usually these fuses are of the 3AG type, rated at 1 ampere. Replacements are available at Radio Shack and elsewhere; you might want to try the Slow-Blow type, but you should never use a fuse with a higher ampere rating.

If your power supply is of the so-called potted type, where everything is sealed in black plastic potting compound, you still have a chance of replacing the fuse. Pry off the bottom cover, and put the power supply in front of you on the bench, upside down with the power cord going off to your left. Measure in from the left 1⅝" and up from the bottom (closest to you) 1¼". Chip away the potting compound in this area, and you'll find a fuse buried ⅛" to ¼" deep in the compound. Chip it clear, then replace it with a new fuse as described above. Clean off the ends of the new fuse to the bare brass, then solder it rapidly to prevent oxidation.

If your fuse is good, and if your power supply can be disassembled, there are still some things you can do. Solder joints can go bad, especially around the large capacitor, although they may look fine on the surface. Simply remelt all joints with a soldering iron, and you may be up and running.

Finally, you can replace the voltage regulator with an ECG 1934 or equivalent, available at many electronics stores for about $8.00. If that fix doesn't work, resign yourself to paying for a new power supply.

Bruce Jaeger
St. Paul, Minnesota

128 apparent failure: After coming home from school one day, I switched on my 128 to find it apparently dead. There was nothing on the screen at all. I turned it off and back on again. Still nothing. I checked 64 mode, and everything was normal. After a little more searching to find what was wrong, I noticed that the 40/80 Display key was pushed in. I released the key, hit STOP

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Adventure Road

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game that's not as intimidating as an *Ultima* or *Bard's Tale,* so anyone can jump right in without reading a 30-page manual. This aspect makes *Legacy* an accessible role-playing game for newcomers and novices, and the graphics are outstanding enough that most hard-core orc-slayers will find this $29.95 program an excellent value.

Clues of the Month

If you haven't been able to get the master key from the hacker in *Lurking Horror,* keep trying — sooner or later you're bound to cook up something that will work. (Put the bzqsnm in the lhbqnvzud.) Stuck in a pentagram? Guess you just can't cut it. (Bts bhqbkd with jmhed.) There's no collater in *Stationfall,* despite the hints about it. But you *can* get something from the vending machine if you stick your neck out. Well, make that someone else's neck. Been to the pet shop? Seen Doc Schuster's office? (You need the coin from the strongbox: shoot lock with gun. Examine ozmdkin pet store ceiling to get nrsqhbg mho. Go to the office and nrsqhbg will follow you to the PX. Put mhoin in gnkd.) To decode these answers, count forward one letter: rstbj = stuck. ■

Telecommunications/Inside Q-Link

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channel, on your modified 64 or 128.

Anyway, I think you get the picture. There are many different areas on Q-Link that might be fun or especially interesting in preparing for the upcoming holiday season. Be sure to watch for special events and other happenings around the system as the holidays draw near.

Before I close, just a quick note about the upcoming trade shows. COMDEX Fall is in early November and Winter CES will be in early January. With the amount of interest in the material I reported on Q-Link from CES last spring, I'm trying to see what I can do for a repeat with the upcoming shows.

Be sure to check the New Product Information section for news on upcoming events and the new products announced at the shows. If I can't make it to both shows, I'll at least try to have someone collecting information for me and everything will be posted as soon as possible.

As usual, comments, questions and suggestions are always welcome via E-Mail and I really do appreciate the feedback. Thanks to all who have responded in the past and please let me know if you have any ideas for future columns. ■

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and RESTORE together, and 128 mode worked perfectly. What a scare!
John Mahowald
Address Unknown

Structured REMs: This system for using REMs makes it easy to understand the organization of a program, even when the listing is flashing by on the screen. I use it in every long program, making life easier for those who try to decipher my software, and also for myself.

Each program starts with six standard REMs. The first is the name of the program, set off by asterisks before and after it. The second is the date of this version of the program. Then there are four more with my name, address and telephone number. These six lines each occupy 40 columns or less, so no line wraps around on the screen. To make them look even nicer, I insert spaces to center their contents on the monitor.

To end the initial REM section, I put a line consisting of a line number and a single colon. (Believe it or not, this is legal in Commodore BASIC.)

I divide the program itself into easily-understood sections. That's usually not very hard, since most programs have several well-delineated functions that lend themselves to such organization.

The first line in each section consists of a REM followed by a space, two or three asterisks and a brief description of the section. I fit this line into 40 columns or less, and I don't use leading spaces to center it.

Like the title section, each of these sections ends with a line made up of a single colon.

Now when the program is listed, its title, date and author are the first things you see on the screen. Its major sections are separated by a colon line followed by a three-asterisk REM line. When you look at one of these listings, it's uncanny how easy they are to follow, either on the screen or on the printer.

To see this REM system in action, download a few of my programs in the Special Edition section of Q-Link. You'll find it in the Commodore Software Showcase.
Louis F. Sander
Pittsburgh, Pennsylvania

Joystick pieces: Many construction projects call for a nine-pin subminiature connector to fit into the joystick port. A convenient and economical source for such connectors is an old Atari, Commodore or similar type joystick that has been taken out of service. These can often be found at yard sales, flea markets and liquidation sales, and the price is usually right.

Not only are they inexpensive, but they also include a molded cable with solderless lugs on the other end. Just take the joystick apart and pull the lugs from the circuit board. If you believe in saving everything, no matter how small, you can cut off the joystick's rubber feet and use them for other projects around the house and computer room.
Matthew Hately
Bowmanville, Ontario Canada

Another TI$ SAVEr: I use the above technique on my 128 by redefining a function key as follows:

```
KEY 7,"DSAVE"+CHR$(34)+"16FEB"+
CHR$(34)+" "+TI$"+CHR$(13)
```

The "16FEB", of course, is changed to the date I'm doing the saving. This method gives me the date as well as the time in my program names, and makes it easy to scratch one day's work by using SCRATCH"16FEB*".
Jim Loomis
Van Etten, New York

128 power supply repairs: If your computer is totally dead, or nearly so, there's a good chance that the fuse in your power supply has blown.

The first thing to do is to isolate the problem to the power supply. The surest way to do this is by borrowing a friend's good power supply and temporarily switching it with yours. If your symptoms continue when the new power supply is connected, the underlying problem is elsewhere in your system. If the symptoms go away, you know that your own power supply is defective. That probably means the fuse is blown.

Before working on your power supply, or on any piece of electrical equipment, you MUST be sure that it's unplugged. With the power plug in sight, look at the power supply to see how it's disassembled. In early units, the fuse holder is under a circular black cap that can be removed with a screwdriver. Later units have four screws that can be removed to let you open the box. Sometimes these are covered with plastic plugs which look like part of the cover. You can remove them with a knife or other pointed instrument.

Disassemble the power supply and locate the fuse. WARNING: Opening the power supply will void your warranty. A visual examination will usually reveal if the fuse is blown, but only an ohmmeter test can tell for sure. If the fuse is blown, replace it with one of identical rating. Usually these fuses are of the 3AG type, rated at 1.6 amps. Replacements are available at Radio Shack and elsewhere; you might want to try the Slow-Blow type, but you should never use a fuse with a higher ampere rating.

If replacing the fuse doesn't fix your problem, you haven't lost much time or money. But if it does, you've probably saved a bundle!
Hai Nguyen
Santa Ana, California

Lightning detector: Lightning season is over in most parts of the country, but remember this tip for next year. A radio tuned to a clear channel at the low end of the AM band makes an excellent lightning detector. You can usually hear the characteristic lightning crackle on the radio long before you hear the thunder or see the approaching darkness.

When you hear the static, it's a good time to save your program, shut down and unplug. It's not very likely that lightning will damage anything, but you're better safe than sorry. Don't forget the modem — it's a good idea to unplug it from the telephone line.
Frank Colaricci
Winter Park, Florida

Saving temporary programs: When developing programs, it's wise to save your work periodically, to be sure it won't be destroyed by a power failure or other disastrous event. If you use a new disk for this purpose, the revisions will appear sequentially in the directory, letting you keep better track of your progress. I generally save all my revisions, at least until the program is finalized, because I never know when I might need something I threw away in one of the early revisions.

By using the variable TI$ to name each revision, keeping track of them becomes even easier. When you type SAVE TI$,8 then press Return, your program will automatically get a unique six-character name. (All right, just probably unique. You could have saved another version exactly 24 hours ago.) This method doesn't work with the 128's DSAVE command or with the Left Arrow SAVE command used in the 64's DOS Wedge program, but the automatic naming feature is more than worth the extra keystrokes used to type the SAVE, the comma and the drive number. [editor's note: This will work with Plus/4 and 128 DSAVE command, but the TI$ must be in parenthesis (i.e. DSAVE (TI$))].

You can achieve even more by setting TI$ equal to the correct time when you turn on your computer. Each program saved using TI$ will then have a name corresponding to the time that it was saved. If it's 11:55, you set TI$ from direct mode by entering TI$="115500". The "00" is for the seconds, and they must be part of the string. Remember, too that using your reset button sets TI$="000000".

I've recently adopted this technique in my own work, and it has taken the tedium and confusion out of saving my backups. If my development work takes more than one day, I use a new disk each day, labeling it with the appropriate date. When it's time to save the finished version of my program, I save it on another disk, using a meaningful plain-English name. When I no longer care to save the previous revisions, I just reformat their disk(s), eliminating the ID code from the formatting command. In seconds, the disk is ready to be reused.

Louis F. Sander
Pittsburgh, Pennsylvania

Monitor glare reduction: Most monitors for Commodore computers have shiny glass faces on their CRT's, so there's often plenty of glare to contend with. A nylon-mesh screen filter can reduce this glare to a very acceptable level. The filter's fine black nylon mesh is stretched over a strong but lightweight frame that fits over the CRT bezel on the monitor. The one I use is an Acco 55571, and is available for under $30 in most office supply stores.

To accommodate the huge diversity of monitor screens, these filters come in various sizes and with many different mounting schemes.

Mine included over a dozen mounting pieces — Velcro, double-sided foam tape, plastic brackets, etc. The Velcro worked well with my Commodore 1902, even though the monitor face is curved and the filter is flat. The nylon is tough and can be cleaned with soap and water.

Louis F. Sander
Pittsburgh, Pennsylvania

128 easy LOAD and RUN: It's easy to load and execute BASIC programs by entering RUN "PROGRAMNAME" from direct mode. But here's an even easier way.

Save your program with a name that ends in a shifted space and a shifted @ sign. Such programs can be loaded from their directory listings by moving the cursor to the listing and pressing F6.

If the program has been named already, you can use the RENAME command to change its name to one ending in shifted space and shifted @.

Frank Klein
South Elgin, Illinois

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128 Screen Mode Swapper: Many 128 programs work best in either 40- or 80-column mode, with the other mode inferior or unacceptable. A well written program will first check to see if the computer is in the proper screen mode, and if it isn't, will switch to the correct mode.

The accompanying short routine checks memory location 215 to determine which screen mode is active, then uses the screen swapper kernal routine at 65375 to make the switch if necessary.

John R. Howell
Houston, Texas

```
100 REM 128 SCREEN MODE SWAPPER-HOWELL
110 REM PEEK(215)=0 IS 40 COL MODE
120 REM PEEK(215)=128 IS 80 COL MODE
130 IF PEEK(215)=128 THEN PRINT "
    [CLEAR]SWITCH MONITOR TO 40 COL
    MODE" : SYS 65375
```

1571 motor shutoff: A bothersome feature of the 1571 is that its motor continues to run for about ten seconds after accessing the disk. You can use this subroutine to turn the motor off in about two seconds. It works with both the 64 and the 128:

```
500 PRINT#15,"M-W";CHR$(53);CHR$(0);CHR$(1);CHR$(1)
510 RETURN
```

Of course, you'll have to execute an OPEN 15,8,15 somewhere before using the subroutine. Then GOSUB 500 after every disk read or write, and the motor will quickly stop.

You can also assign the command to a function key on the 128, if you include the OPEN and CLOSE commands in the key assignment. The assignment statement is straightforward enough, but contains enough punctuation marks to surely confuse our typesetter. We'll leave its exact format to you.

The routine works by changing the value in the drive's RAM location 53, which is used as a count-down timer for turning off the drive motor. The normal value is 6, but this program changes it to 1. Don't try changing it to zero, or the motor will not turn off.

Ray Roberts
Gainesville, Florida

Double-sided 1571 in 64 mode: If you reset the computer in 64 mode, the 1571 disk drive automatically sets itself to single-sided mode. If you want to work in 64 mode and retain the double-sided capacity of the 1571, you can do what I did.

I put the following program as the first one on any disk that's destined for 64 mode programs:

```
100 DIRECTORY : PRINT "PRESS Y FOR 64 MODE" :
    GETKEY A$
110 IF A$="Y" THEN GO64 : ELSE NEW
```

I saved the program as "GO64", then used my Autoboot creator to run it automatically when the system boots.

Now when I turn on the computer, a single keystroke gets me going with my drive active in double-sided mode and my computer in 64 mode.

Larry Hardy
APO, New York

Technical Tips/Small DOS

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```
145 IF T2<>26137 THEN 500'EKEI
200 S=NT+128:T3=0:SE=3'EOTC
205 READ A,D:IF A=-1 THEN 230'FJIG
210 T3=T3+A+D'DGCA
220 POKE S+A,D:GOTO 205'DIIB
230 IF T3<>7298 THEN 500'EJOD
300 EA=NT+640:EH=INT(EA/256)
    :EL=EA-256*EH'ICPI
302 TC=0:PRINT"CHECKING ML..."'CEPE
305 FOR M=NT+128 TO EA-1:TC=TC+PEEK(M)
    :NEXT'JSBM
307 IF TC<>68788 THEN PRINT"ERROR IN
    ML!":GOTO 510'GLMN
308 F$="SD.ML"'BCBH
310 SYS 57812F$,8,1:REM PARAMETERS
    FOR SAVE'CEMG
315 POKE 193,PEEK(55):POKE 194,
    PEEK(56):REM START ADDRESS'FFHN
317 POKE 174,EL:POKE 175,EH
    :REM END ADDRESS+1'DBZN
318 PRINT"SAVING ML"'BAIJ
320 SYS 62957:REM PERFORM A BSAVE'CTOF
330 END'BACA
500 PRINT"DATA ERROR IN
    SECTION"SE'BCRF
510 NT=NT+333:NH=INT(NT/256)
    :NL=NT-256*NH'ICTM
520 POKE 51,NL:POKE 52,NH:POKE 55,NL
    :POKE 56,NH:END'FYRJ
999 REM --- SECTION 1 ---'BOBY
1000 DATA 164,56,136,136,132,56,166,
     55'BDXX
1008 DATA 132,52,132,54,165,45,133,
     195'BDMG
1016 DATA 165,46,133,196,198,196,198,
     196'BFTG
1024 DATA 134,36,132,37,160,0,177,
     195'BCNE
1032 DATA 145,36,230,195,208,2,230,
     196'BDND
1040 DATA 56,165,195,229,45,133,34,
     165'BDCC
1048 DATA 196,229,46,5,34,144,2,
     240'BAPK
1056 DATA 10,230,36,208,2,230,37,
     208'BBWJ
1064 DATA 221,240,219,96,0,0,-1'BVBH
1999 REM --- SECTION 2 ---'BOCX
2000 DATA 120,184,80,50,234,234,0,
     200'BCRY
2008 DATA 177,122,208,251,132,118,136,
     152'BGBI
2016 DATA 166,122,164,123,232,32,189,
     255'BFIH
2024 DATA 169,1,166,119,160,0,32,
     186'BBNF
2032 DATA 255,32,89,225,169,13,32,
     22'BBRE
2040 DATA 231,164,118,184,80,67,0,
     0'BAID
2048 DATA 0,0,0,0,0,0,80,117'BSPJ
```

```
2056 DATA 240,205,200,177,122,41,15,
     201'BEIL
2064 DATA 8,240,9,201,9,240,5,162'BXMI
2072 DATA 9,76,55,164,133,119,76,
     134'BBCI
2080 DATA 227,0,0,0,0,200,177,122'BXPG
2088 DATA 240,77,201,81,240,6,201,
     35'BBAP
2096 DATA 240,216,208,69,162,5,189,
     162'BDWO
2104 DATA 227,149,115,202,16,248,76,
     134'BELF
2112 DATA 227,234,80,88,200,200,177,
     122'BEBE
2120 DATA 208,251,132,118,136,152,166,
     122'BGYD
2128 DATA 232,164,123,32,189,255,169,
     1'BDRK
2136 DATA 166,119,160,1,32,186,255,
     169'BDVJ
2144 DATA 0,133,147,32,213,255,176,
     140'BDCI
2152 DATA 76,134,227,240,216,201,64,
     240'BEZI
2160 DATA 180,201,95,240,147,208,87,
     240'BEIH
2168 DATA 96,208,96,208,81,32,138,
     0'BAXO
2176 DATA 186,202,189,0,1,188,1,1'BXOM
2184 DATA 24,105,31,133,116,144,1,
     200'BCLM
2192 DATA 132,117,169,76,133,115,169,
     8'BDXL
2200 DATA 133,119,88,96,80,105,-1'BXWA
2999 REM --- SECTION 3 ---'BODY
3000 DATA 213,118,242,118,246,37,248,
     162'BFKB
3008 DATA 249,208,250,162,255,118,277,
     118'BGSJ
3016 DATA 281,165,282,119,313,165,314,
     119'BGNI
3024 DATA 359,166,360,119,362,118,375,
     165'BGCH
3032 DATA 376,119,-1,-1'BNDC
```

END

Program 2

```
6 REM --- VIC-20 VERSION ---'BTBJ
145 IF T2<>26036 THEN 500'EKCI
307 IF TC<>68820 THEN PRINT"ERROR IN
    ML!":GOTO 510'GLYN
310 SYS 57809F$,8,1:REM PARAMETERS
    FOR SAVE'CESG
320 SYS 63109:REM PERFORM A BSAVE'CTEF
1999 REM --- SECTION 2 ---'BOCX
2032 DATA 255,32,86,225,169,13,32,
     66'BBWE
2072 DATA 9,76,55,196,133,119,76,
     116'BBHI
2080 DATA 196,0,0,0,0,200,177,122'BXUG
2096 DATA 240,216,208,69,162,5,189,
     135'BDWO
2104 DATA 227,149,115,202,16,248,76,
     116'BELF
2112 DATA 196,234,80,88,200,200,177,
     122'BEGE
2152 DATA 76,116,196,240,216,201,64,
     240'BEEI
```

END

Program 3

```
100 CA=(PEEK(45)+256*PEEK(46))
    -640'GSIC
110 PRINT"[CLEAR,DOWN]TOP OF MEMORY
    (Y/N)?"'BARC
120 POKE 198,0:WAIT 198,1:GET A$'DOJB
130 IF A$<>"Y"THEN 500'EFIB
140 SYS CA:CLR'CDWA
400 PRINT"[DOWN]SMALL DOS INSTALLED"
    :EA=PEEK(36)+256*PEEK(37)
    :DS=EA-511'IWMN
410 PRINT DS"TO"EA:PRINT"[DOWN2]
    SYS"DS"[UP3]"'CHIF
412 REM'BARB
415 POKE 198,1:POKE 631,13:NEW'DNII
500 INPUT"[DOWN]WHERE";DS
    :DH=INT(DS/256):DL=DS-256*DH'HXRK
505 IF DS<1024 OR DS>40448 AND
    DS<49152 OR DS>52736 THEN
    PRINT"ILLEGAL ADDRESS":END'LDNV
510 POKE 781,DL:POKE 782,DH:CA=CA+12
    :GOTO 140'FYRI
```

END

Accolade

Continued from pg. 72

Turbo to the classic American Corvette. The object of the game is to drive your vehicle on a typical mountain road equipped with pot holes, fallen rock, men at work, slow moving trucks, traffic coming from the other direction, etc. To complicate matters, "Smokies" are watching the road for speeders, but you have a radar detector to monitor their activities. A rear view mirror is also provided. *Test Drive* is destined to become a very popular game

> If you enjoy driving software automobiles around a defined track, *Test Drive* will give you the challenge of your life.

because it's fresh, exciting and simulates more of the actual features we associate with real automobiles.

Amiga: The Amiga version of *Test Drive* will also be coming your way during the third quarter of the year.

Activision

Continued from pg. 73

their boy Ed out of school and all three of them vanished without a trace. Many people believe the family simply moved away, but local gossip still circulates about them living in the old mansion on the hill. Oddly enough, teenagers have started disappearing from the town in recent months. A beautiful girl named Sandy has now been abducted, and her boyfriend Dave is determined to find her. As Dave, your first chore consists of selecting two young companions from a list of six to help you explore the huge house where Dr. Fred might be holding Sandy prisoner. *Maniac Mansion* also exhibits interesting cell animation graphics (a technique commonly used by professional cartoonists). It displays all the

> The working title of the project is *Air Rally,* and it's similar in many respects to being a *Pole Position* or *Out Run* game of the air.

verbs you need to know on the screen; there are over 450 objects in the building to work with, and the house itself contains 55 different rooms and areas to explore. As you continue to play the game, you will discover there is more to the plotline than merely saving Sandy. Something comes streaking down across the sky early in the adventure and crashes to earth somewhere behind the old mansion. If you want to learn more about this mysterious visitor from outer space and how it affects the lives of Sandy's rescue team, purchase a copy of *Maniac Mansion* and earn the right to know all the answers. During this same time period, a new Gamestar boxing program will also be introduced.

Capcom U.S.A. Inc.

Continued from pg. 74

I have to make quick decisions, so *Trojan* was right up my alley.

Mark November on your calendar because three more Capcom programs will be coming your way. *Hat Trick,* a game requiring quick responses and instant strategies, teleports the user into the world of professional hockey. Whether you choose to play the computer or a close friend, *Hat Trick* delivers a powerful slap shot of good old fashioned entertainment. *Bionic Commando* is an offshoot of the popular *Commando* coin-op machine. It features a G.I. Joe type character fighting a one man war against some very powerful adversaries. Our hero has an advantage over his enemies, however, because his bionic arm can fire bullets, shoot a grappling hook at a wall, etc. When the Bionic Man isn't around, *Bionic Commando* arrives to save the day. *Mini-Golf* is another miniature golf game, patterned after the Bally coin-op machine of the same title. Some of the hazards in this program include moving gates, swings and a whirlpool of water to play around. Even though the golfer only has to master the use of a putter in the game, *Mini-Golf* provides a unique collection of challenges that aren't found in regulation golf.

Closing out the year, *Street Football* ushers in a new approach to playing the classic,

> *Hat Trick,* a game requiring quick responses and instant strategies, teleports the user into the world of professional hockey.

well-known sport. I don't have a lot of information about this product, but I understand guys from the other team can come up out of man holes to tackle the ball carrier. When asked to comment about future Capcom products, a company representative said there will definitely be more 64 coin-op machine translations coming in 1988.

Data East

Continued from pg. 74

Basically you have to scale the burning building and rescue the people trapped inside. Attention, members of the Alien Blasters Society: *Last Mission* is a new program where the player becomes the pilot of a heavily armed star fighter. His assignment is to clear a path to the enemy star base and terminate its existence. I understand this game requires a steady hand on the joystick and a lot of strategy when it comes to using your weapons effectively.

Four more arcade game titles will be marketed during the final quarter of the year. Believe it or not, *Kid Niki,*

> If you've seen *The Towering Inferno,* you know what you're up against in *Fire Trap.*

Radical Ninja is a cool modern day fairy tale come to life. Kid Niki, the punk sword wielder of the community, is searching for his spike-haired girlfriend, presently held in the clutches of the infamous Stone Wizard. The storyline of this program is awesome and Niki swings a mean blade whenever he confronts an enemy. Join the Data East Air Force and *Lock-On* to a unique 3D game playing experience. Fly the unfriendly skies in your jet fighter, destroying targets on land, at sea, and in the air. *Karnove,* the fire breathing Russian, wants to locate the fabled Treasure of Babylon. Standing in his way are nine levels of the most unusual foes you've ever seen. Many of them exist in your worst pre-historic nightmare. *Speed Buggy,* on the other hand, is a true test of a computer driver's skill and endurance. The player earns points by running into flags on a preselected course, while carefully avoiding or jumping fallen trees, rocks and other obstacles.

Datasoft

Continued from pg. 74

pertise and capabilities. The mission itself requires you and your people to rescue human beings from an energy manufacturing plant taken over by hostile alien life forms. You'd

better bring a lot of ammunition along for this "Bug hunt." Even though the storyline might sound vaguely familiar, *Force Seven* offers several different types of aliens to combat, and only one member of

Tomahawk displays 3D ground graphics and carries an arsenal of weapons including rockets, guns, and laser-guided anti-armour missiles.

your squad can explore the plant at any given time. You could almost subtitle this program "The Magnificent Seven Rambos Meet The Aliens."

Electronic Arts

Continued from pg. 74

portal to this world doesn't exist anymore. While all this is going on, seven powerful Shadow Lords are directing an invasion force of darkness which may destroy civilization as we know it on all of the worlds. These and many other mysteries will test your powers of ingenuity as you explore the eight realms of *Rainbow Road*. The program also has a list of 31 characters you can initially become (many of them are female), excellent detailed graphics, sophisticated computer companions and a taste of fantasy reminiscent of the Tolkien books. In short, *Rainbow Road* is a refreshing new form of entertainment, combining the excitement of role playing with the problem solving environment of adventure games. I expect this Christmas release to be one of the most talked about programs of the holiday season.

64/128: *Commando Rescue,* a working title, is a fast action search and rescue mission, where your goal is to locate hostages in a huge building and deal with the terrorists holding them prisoner. Your equipment for this assignment are grenades, sticks of dynamite, a pistol and a jet pack. Our hero can also go up and down elevators in the game, and he has a variety of karate moves saved for encounters with human foes. The building security robots don't know the good guys from the bad guys so shoot them on sight. You can participate in this anti-terrorist campaign sometime during the final quarter of the year.

Coming in 1988: It's hard to believe but Chuck Yeager, the legendary American test pilot, can give you private flying lessons in your own home. Yes, *Chuck Yeager's Advanced Flight Simulator,* coming out for the Amiga and 64 systems during the first half of next year, is a user friendly piece of software with many interesting features. First of all it contains a hangar of 14 different aircraft, ranging from the classic Sopwith Camel to more sophisticated models like the Bell X-1. The program contains

With *Chuck Yeager's Advanced Flight Simulator,* you're ready to play follow-the-leader with General Yeager through an obstacle course.

three forms of instruction: (1) It teaches fundamental flying skills like taking off, landing, etc., (2) The more advanced pilot receives in-air graphic directions for performing complicated maneuvers like aileron rolls and hammerhead stalls and (3) You're now ready to play follow-the-leader with General Yeager through a special obstacle course at high speed. The program also features an air race where the experienced aviator demonstrates the skills he has learned and competes against six computer pilots at full throttle. Some of you may have noticed by now that the Yeager simulator doesn't offer any military combat assignments. Late next year, *General Chuck Yeager's Air Combat Simulator* will be available for both the Amiga and 64 computers. One final bit of news: a 64 conversion of *Earl Weaver Baseball* will be marketed during the early months of 1988.

Epyx Inc.

Continued from pg. 74

would play on the local playground or in a close friend's backyard. The player has to select the best possible team from a group of neighborhood kids. Add the elements of "round ball" to the scheme of things, and *Street Sports Basketball* will definitely be a hit among young and old alike. One more thing: no new *Graphic Scrapbook* diskettes will be put on the market this year. Epyx feels the current library is too new to warrant the release of additional material at this time.

Amiga: *Street Sports Basketball* and *The Omnicron Conspiracy* will also be available for Amiga users in September. By early October, the 16 bit version of *California Games* should be making the scene in a computer store near you. *California Games* is the fifth installment of the famous Epyx "Games" line, and it promises to be something very special. The events in the program haven't reached Olympic status yet but let's face it, the public has fallen in love with surfing, BMX bicycle racing, skating, frisbee throwing, etc. So put on your favorite Beach Boys album, grab your most reliable joystick and journey to the land of fun in the sun.

Coming in 1988: Next year, the world will focus its attention on the Olympic Games taking place in South Korea and Canada. Bob Botch, Vice President of Marketing at Epyx, recently suggested that his company was making plans to celebrate this occasion by developing a sixth edition of their popular "Games" series. The program should be available sometime next Spring, but Bob couldn't reveal the proposed title or subject matter of the product. Let's just say it won't be called "Presidential Games."

Firebird Licenses Inc.

Continued from pg. 74

adventure which will once again carry you off to the mystical land of Kerovnia. It's interesting to note that *Guild*

Have you ever wanted to play an arcade game before it actually comes out on a coin-op machine?

doesn't conclude the story started in *The Pawn*. There may be more sequels coming your way in the near future.

Knight Orc is another new graphic adventure game with an interesting plotline. You are an Orc, a race persecuted by human beings on your magical world for many centuries. Orcs now have the opportunity to turn the tables on their oppressors, and you are in the thick of things. This program features a 1,000-word vocabulary, interesting graphics and a twisted sense of humor.

Other 64 programs scheduled for release later this year include *Golden Path, The Advanced Art Studio, Druid One, Revs Plus, Cholo, Heartland* and ten budget diskettes, each one containing two different games. Two additional graphic

adventures will also be unveiled to the public before Christmas: *Jewels of Darkness* and *Silicon Dreams*.

Amiga: *Guild of Thieves,* and *Knight Orc* will also be surfacing in Amiga software centers late this year.

Coming in 1988: Have you ever wanted to play an arcade game in the privacy of your computer room, before it actually comes out on a coin-op machine? Firebird has recently negotiated a deal with a famous Japanese game company where you will have the opportunity to play 64 conversions of unreleased coin-op games sometime next year.

> With the *Universal Military Simulator,* the user can reconstruct any land skirmish known to man.

Three titles will materialize out of this arrangement in 1988. Martin Davies, the president of Firebird Licensees Inc., recently mentioned another new project called *Black Lamp.* He wouldn't shed much light on the subject, except that it has a unique concept and uses the style of programming made famous by Cinemaware. This action game should be on the market for 64 and Amiga users sometime during the first half of the year. Other 64 scheduled releases for early 1988 are *Hyper Ball, Kinetic* and *Pandora.* Finally, I must tell you about the *Universal Military Simulator,* the ultimate military war game construction set, where the user can re-construct any land skirmish known to man. These confrontations can include historical battles like Gettysburg or imaginary encounters where Cro-Magnon men with clubs might take on a legion of Roman soldiers. If you enjoyed a specific *Star Wars* land battle, for example, use the program to input the terrain data, armies, vehicles, villages, friendly inhabitants, and other factors, choose whether to command the Empire of Rebel Forces, and knock the chip off your opponent's shoulder. You also have the option of letting the computer fight things out logically. This impressive simulator can generate over a million random maps and re-create any specific map of an area. All the graphics have a 3D appearance, and the software itself was designed to be user friendly. Data disks containing a number of famous battles will be developed and marketed for individuals who want to command the troops but don't have the time to input all the details. The program will be available for 64 and Amiga generals by the second quarter of 1988.

Infocom

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The unusual *Nord and Bert Couldn't Make Heads or Tails of it* is essentially a collection of short stories where two cartoon characters experience some unique problems with common words and phrases. One segment of the program, for example, deals with cliches. During

> Solve the new series of Zork-like problems and defeat the monsters met in previous Zork programs.

this segment of the game the user must put the cart before the horse, teach an old dog new tricks and perform other equally bizarre tasks. This package also contains an unusual cartoon booklet destined to become a collector's item.

To commemorate the tenth anniversary marking the release of the original *Zork* program, Brian Moriarty has authored the long-awaited *Beyond Zork* interactive adventure game (subtitled "The Coconut of Quendor"). Basically this program has you searching for a sacred coconut which can give its owner a variety of magical powers. The player has to solve a new series of Zork-like puzzles, defeat some monsters he has met in previous Zork programs and do a little role playing on the side.

Amiga: All three of the above titles will be simultaneously released for the 64 and Amiga computers.

MicroProse

Continued from pg. 75

game. The F-15 simulation is basically an air-to-air superiority challenge where you engage in dog fights, finish off your foe, bomb a specific target and fly back to the carrier in one piece. Stealth Fighters are not as fast nor as powerful as the F-15, but they can sneak into an area without being detected by enemy radar. They're light, quick and have the ability to photograph enemy territory, while carrying enough fire power to get themselves back out. Weapons on the craft will include all the standard air-to-air missiles currently being used by the military. Seven or eight mission scenarios are being planned for the project, and a reconnaissance flight over the Soviet rocket center in the southwest region of the Ukraine is presently in the works. By the way, *Project Stealth Fighter* isn't patterned after one particular aircraft because the Air Force won't acknowledge that planes of this nature actually exist.

The MicroProse development team is currently finishing *Airborne Ranger* for the 64. This program points the company in a totally new direction because it contains an arcade game format, the typical MicroProse simulation approach and a rare opportunity to bring the U.S. Army into one of their projects. In *Airborne Ranger* you parachute behind enemy lines to knock out two targets in a military zone. Your weapons for this assignment include LAWS Rockets, hand grenades and a submachine gun. The

> A new game, based on Tom Clancy's popular book *Red Storm Rising,* will be in computer stores shortly before Christmas.

rules for this game are quite simple. Use all your weapons sparingly because you only have access to what you are carrying. Your prime goal is to "E and E" (escape and evade). Avoid contact with enemy forces as much as possible and crawl through areas to prevent detection at times. The ranger can also move in eight different directions and has the ability to run when necessary, but a fatigue factor restricts his activities during a mission. There are presently three scenarios being developed for the project: (1) a scrub brush desert assignment, (2) an airfield mission, and (3) a western Europe challenge.

One final note. A new game, based on Tom Clancy's popular book *Red Storm Rising,* will be in computer stores shortly before Christmas. Major Bill wouldn't officially comment on the subject, but he did tell me the basic storyline of the manuscript. *Red Storm Rising* tells the story of a proposed rapid Russian military takeover of Western Europe, where the U.S. wouldn't be able to mobilize quickly enough to stop the attack. Everything

seemed reasonable enough on paper, so the Soviets initiated this grand offensive. Once that takes place, the situation becomes so complex in the book that the author used five separate plot lines to record the downfall of this bold action. MicroProse is using three of these mini-stories as the basis for their *Red Storm Rising* game.

Coming in 1988: *Airborne Ranger* will be dropping in on Amiga owners sometime next Spring.

Origin Systems Inc.

Continued from pg. 75

passage of time, and the astronomical movements of the sun, moon, and planets are also taken care of. The underworld portion of the program is equal in size to the entire realm of Britannia. If these features aren't enough to capture your interest, I should tell you that the citizens of each town get up in the morning, eat lunch, work, go to bed at night, etc. In conclusion, *Ultima 5* is a unique program with more detailed graphics than its predecessors, a selection of new sound effects (waterfalls, clocks ticking, bards playing instruments, etc.), and all of this software magic will occupy eight disk sides.

> *Space Rogue* takes fantasy role-playing individuals into the infinite void of outer space.

Coming in 1988: During the early days of 1988, two new role-playing programs will be introduced to the public. *2400 A.D.* takes place in a futuristic society where robots rule their human creators. You are a concerned citizen wanting to bring about a change in this situation. Your first task involves de-activating your mechanical masters. Once that has been accomplished, break out of the domed city and live the life of a free man. Another new product, *Space Rogue,* takes fantasy role-playing individuals into the infinite void of outer space. February is the scheduled release date for *Second Season Basketball.* This program dares you to become the coach of a professional basketball team. Evaluate player statistics as you select a starting lineup for each game, design your own strategies, make substitutions, and take your team to the top of the heap. Other titles coming your way in 1988 include: *The Undead* (a working title that may be changed to *Dracula, Prince of Darkness), Moebius 2,* and *Auto-Duel 2.* All of these programs will be released for the 64 and possibly for the Amiga at a later date.

Sharedata

Continued from pg. 75

Jeopardy! data disks for the education industry. Later in the year game show enthusiasts will have the opportunity to purchase *The Price is Right* and *Name That Tune.* Additional data disks for these programs will follow their release.

The company has also been doing some work with Walt Disney Productions. They are presently completing a series of eight games based on famous Disney theme park rides and movies. By the time you read this article, one or two of these titles should already be on the market, with the remaining programs coming out before November. *The Chase on Tom Sawyer's Island* is a ten-level action game where Tom cautiously picks up berries while being pursued by Aunt Polly, Injin Joe and a bear. Mountain climbing is a unique sport, and *Matterhorn Screamer* challenges you to take control of Goofy's movements as he climbs to the summit of this famous peak. Brace the dangers of darkest Africa on a *Jungle Cruise* down a slow moving river, as you gather diamonds along the way and deal with problems generated by hostile wildlife and primitive natives. *Big Thunder Mountain* is a mining venture yielding large quantities of gold. To do well in the game, the miner must collect the precious metal from three levels of tunnels and transport it to the bank faster than the local bandits can steal it. Fans of *The Black Hole* movie can participate in a robot duel, *Space Mountain,* based on the very popular theme park ride, and *Herbie The Love Bug* dares you to take him out for a spin. A final title, *The Sword in The Stone,* is a graphic text adventure requiring the eager young squire to perform a selection of difficult tasks. Completion of these chores entitles you to pull the sword from the stone and become the rightful king of England. All eight of these titles are budget priced and exhibit the quality associated with the Disney name.

> Game show enthusiasts will have the opportunity to purchase *The Price Is Right* and *Name That Tune.*

> *Big Thunder Mountain* is a mining venture yielding large quantities of gold.

Coming in 1988: Softie, the creator of the TV game show programs, presently owns the software licensing rights to *Password, Card Sharks* and *Concentration.* These titles should be surfacing for 64 contestants sometime during the first two quarters of the year. There will also be several product releases in 1988 based on Bud Chapman's infamous 18 hole golf course paintings. These holes are so ingeniously designed that it would be impossible to play them in the real world, but they can exist in all their glory on a computer. To give you an idea of what I am talking about, one painting has the golfer teeing off across the Grand Canyon, while another masterpiece displays a beach scene, where the player has to time each shot to avoid the incoming waves. This type of golf program should be fun and very challenging because every hole has a different set of rules and conditions.

Sublogic Corporation

Continued from pg. 75

new one containing much of Southern Europe, Northern France, and West Germany. It will be ready for shipment by September.

> *Stealth Mission* will be compatible with the present line of Sublogic Scenery Disks, and a special set of mission disks are also being developed for the product.

Amiga: September is also the debut month for *Jet 2.* This simulation features a new cockpit design, a better selection of sounds, and filled ground objects containing more details. *Jet 2* also offers the pilot a selection of dog fight and target strike scenarios, while being compatible with existing Sublogic Scenery Disks.

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```
   :POKE F+I,0:NEXT'IAIK
50 FOR I=32 TO 64:POKE T+I,I:NEXT
   :POKE T+13,13:POKE T+20,8'KYSM
60 FOR I=65 TO 90:POKE T+I,I+32
   :POKE T+I+128,I:NEXT'KVEN
70 FOR I=91 TO 95:POKE T+I,I:NEXT
   :POKE T+146,16:POKE T+133,16'KCEP
80 FOR I=0 TO 255:K=PEEK(T+I)
   :IF K<>0 THEN POKE F+K,I
   :POKE F+K+128,I'PBMT
90 NEXT:FOR I=0 TO 31:POKE T+I,I:NEXT
   :POKE T+20,8:SYS ML'KUPP
100 PRINT:PRINT" TO ACCESS TERMINAL,
    PRESS CTRL-A"'CBCF
110 PRINT:PRINT" TO DEACTIVATE,
    PRESS RUN-STOP/RESTORE"'CBEH
120 PRINT:PRINT" TO RESTART,
    SYS 49152"'CBUD
1000 DATA 32,78,195,73,78,83,84,65,78,
     84,32,84,69,82,77,33'BXDC
1001 DATA 13,0,120,173,20,3,141,29,
     197,173,21,3,141,30,197,169'BCWE
1002 DATA 48,141,20,3,169,192,141,21,
     3,169,0,141,22,197,88,96'BBUF
1003 DATA 173,141,2,201,4,208,15,165,
     197,201,10,208,9,173,22,197'BEDG
1004 DATA 240,7,169,255,133,204,108,
     29,197,169,255,141,22,197,32,
     231'BIUI
1005 DATA 255,169,0,133,212,173,134,2,
     141,26,197,173,32,208,141,27'BGAJ
1006 DATA 197,173,33,208,141,28,197,
     173,24,208,141,31,197,173,17,
     208'BIXK
1007 DATA 141,32,197,173,22,208,141,
     33,197,173,21,208,141,34,197,
     173'BIKL
1008 DATA 0,221,141,35,197,173,136,2,
     141,36,197,120,162,0,181,0'BDRL
1009 DATA 157,0,164,189,0,216,157,0,
     165,189,0,217,157,0,166,189'BDCM
1010 DATA 0,218,157,0,167,189,0,219,
     157,0,168,232,208,224,88,169'BEAF
1011 DATA 54,133,1,76,42,193,173,2,
     221,9,3,141,2,221,96,162'BYJE
1012 DATA 0,189,0,165,157,0,216,189,0,
     166,157,0,217,189,0,167'BBVG
1013 DATA 157,0,218,189,0,168,157,0,
     219,232,208,229,162,255,189,
     0'BFUI
1014 DATA 164,149,0,202,208,248,88,
     173,26,197,141,134,2,173,27,
     197'BGAJ
1015 DATA 141,32,208,173,28,197,141,
     33,208,173,31,197,141,24,208,
     173'BIJK
1016 DATA 32,197,141,17,208,173,33,
     197,141,22,208,173,34,197,141,
     21'BHJL
1017 DATA 208,32,182,192,173,35,197,
     141,0,221,173,36,197,141,136,
     2'BGHM
1018 DATA 169,0,141,22,197,133,198,76,
     188,254,169,0,141,21,197,141'BGYN
1019 DATA 16,197,141,138,2,141,21,208,
     169,6,141,32,208,141,33,208'BFXO
1020 DATA 141,15,197,32,182,192,169,5,
     141,0,221,169,27,141,17,208'BFHG
1021 DATA 169,200,141,22,208,169,135,
     141,24,208,169,160,141,136,2,
     169'BJDH
1022 DATA 1,141,134,2,169,147,32,210,
     255,162,1,160,14,24,32,240'BDIH
1023 DATA 255,32,78,195,105,78,83,84,
     65,78,84,32,116,69,82,77'BBOI
1024 DATA 0,162,3,160,19,24,32,240,
     255,32,78,195,66,89,0,162'BAQJ
1025 DATA 5,160,15,24,32,240,255,32,
     78,195,98,79,66,32,107,79'BBOK
1026 DATA 68,65,68,69,75,13,13,13,13,
     0,32,78,195,42,45,45'BWNK
1027 DATA 32,112,82,69,83,69,84,83,32,
     45,45,42,13,13,0,32'BWWL
1028 DATA 78,195,49,46,32,98,65,85,68,
     58,32,51,48,48,13,0'BWMM
1029 DATA 32,78,195,50,46,32,100,85,
     80,76,69,88,58,32,102,85'BAPO
1030 DATA 76,76,13,0,32,78,195,51,46,
     32,112,65,82,73,84,89'BXUF
1031 DATA 58,32,111,70,70,13,0,32,78,
     195,52,46,32,119,79,82'BYBG
1032 DATA 68,83,73,90,69,58,32,56,13,
     0,32,78,195,53,46,32'BWWH
1033 DATA 115,84,79,80,66,73,84,83,58,
     32,49,13,13,0,32,78'BWTI
1034 DATA 195,32,97,67,67,69,80,84,32,
     80,82,69,83,69,84,83'BXEJ
1035 DATA 63,32,40,121,32,79,82,32,
     110,41,0,162,23,160,10,24'BAEL
1036 DATA 32,240,255,32,78,195,102,55,
     45,116,79,32,101,120,105,116'BGUN
1037 DATA 32,84,69,82,77,73,78,65,76,
     0,32,228,255,240,251,201'BBJN
1038 DATA 136,208,3,76,191,192,201,89,
     240,7,201,78,208,236,32,53'BEVO
1039 DATA 196,169,147,32,210,255,32,
     78,195,102,51,45,116,79,71,
     71'BFBQ
1040 DATA 76,69,32,68,85,80,76,69,88,
     32,32,32,32,102,53,45'BXWG
1041 DATA 114,69,84,85,82,78,32,84,79,
     32,109,69,78,85,13,0'BXLH
1042 DATA 169,13,32,48,195,169,2,162,
     15,160,197,32,189,255,169,5'BEMK
1043 DATA 162,2,160,3,32,186,255,32,
     192,255,162,169,160,170,134,
     248'BHJL
1044 DATA 132,250,162,5,32,201,255,
     169,0,32,210,255,32,204,255,
     162'BGHM
1045 DATA 5,32,198,255,32,228,255,72,
     32,204,255,104,240,10,168,
     185'BGJN
1046 DATA 37,197,32,48,195,76,204,194,
```

```
     32,228,255,240,223,201,135,
     208'BITO
1047 DATA 8,169,5,32,195,255,76,42,
     193,201,134,208,11,173,21,
     197'BEYO
1048 DATA 73,255,141,21,197,76,204,
     194,201,147,208,6,32,48,195,
     76'BFBQ
1049 DATA 204,194,168,162,5,32,201,
     255,185,37,198,168,32,210,255,
     32'BHQR
1050 DATA 204,255,173,21,197,240,165,
     185,37,197,32,48,195,76,204,
     194'BILJ
1051 DATA 201,13,208,8,164,211,169,32,
     145,209,169,13,32,210,255,
     169'BHDK
1052 DATA 0,133,212,169,164,32,210,
     255,169,157,32,210,255,96,104,
     133'BIXL
1053 DATA 251,104,133,252,208,3,32,
     210,255,160,0,230,251,208,2,
     230'BGQM
1054 DATA 252,177,251,208,241,165,252,
     72,165,251,72,96,147,115,101,
     108'BKGO
1055 DATA 101,99,116,13,13,98,65,85,
     68,32,114,65,84,69,13,32'BAJN
1056 DATA 49,46,32,51,48,48,13,32,50,
     46,32,49,50,48,48,0'BVDN
1057 DATA 19,13,13,119,79,82,68,32,76,
     69,78,71,84,72,13,32'BXAO
1058 DATA 49,46,32,56,32,98,73,84,83,
     13,32,50,46,32,55,32'BWKP
1059 DATA 98,73,84,83,0,19,13,13,115,
     84,79,80,32,98,73,84'BWCQ
1060 DATA 83,32,32,13,32,49,46,32,49,
     32,98,73,84,32,13,32'BWBI
1061 DATA 50,46,32,50,32,98,73,84,83,
     0,19,13,13,100,85,80'BWRJ
1062 DATA 76,69,88,32,32,32,13,32,49,
     46,32,102,85,76,76,32'BXNK
1063 DATA 32.13,32,50,46,32,104,65,76,
     70,32,32,0,19,13,13'BWUL
1064 DATA 112,65,82,73,84,89,13,32,49,
     46,32,111,70,70,32,13'BYUM
1065 DATA 32,50,46,32,111,68,68,32,13,
     32,51,46,32,101,86,69'BYPN
1066 DATA 78,13,32,52,46,32,109,65,82,
     75,13,32,53,46,32,115'BYVO
1067 DATA 80,65,67,69,0,162,6,169,0,
     157,15,197,202,16,250,160'BBWQ
1068 DATA 0,185,108,195,240,6,32,210,
     255,200,208,245,32,228,255,
     240'BHSS
1069 DATA 251,162,6,201,49,240,6,201,
     50,208,241,162,8,142,15,197'BEAS
1070 DATA 160,0,185,144,195,240,6,32,
     210,255,200,208,245,32,228,
     255'BHTL
1071 DATA 240,251,201,49,240,9,201,50,
     208,243,169,32,141,18,197,
     160'BHWM
1072 DATA 0,185,181,195,240,6,32,210,
     255,200,208,245,32,228,255,
     240'BHTN
1073 DATA 251,201,49,240,9,201,50,208,
     243,169,128,141,17,197,160,0'BGXO
1074 DATA 185,218,195,240,6,32,210,
     255,200,208,245,32,228,255,240,
     251'BJYP
1075 DATA 201,49,240,14,201,50,208,
     243,169,16,141,19,197,169,255,
     141'BIHQ
1076 DATA 21,197,160,0,185,253,195,
     240,6,32,210,255,200,208,245,
     32'BGSR
1077 DATA 228,255,240,251,201,49,240,
     27,162,32,201,50,240,18,162,
     96'BHUS
1078 DATA 201,51,240,12,162,160,201,
     52,240,6,162,224,201,53,208,
     223'BHQT
1079 DATA 142,20,197,173,15,197,24,
     109,18,197,24,109,17,197,141,
     15'BGWU
1080 DATA 197,169,0,24,109,19,197,24,
     109,20,197,141,16,197,96,6'BDQL
```

END

Continued from pg. 18

your program for speech, the printer or any of the specialized LIBRARY functions.
Tim Jones
Deltona, FL

MODEM support from AmigaBASIC: If you are using the COM: device to talk to a MODEM in AmigaBASIC and wish to be able to change BAUD rates without killing a connection (as some BBS's will automatically drop to the next lowest speed if the error rate gets too high), you can open a new channel to the COM: device without having to close the previously opened one. The COM: device is the only device that will not return a FILE IN USE type of error if you open more than one channel to it. To keep things simple, I use a variable to keep track of what number I am using and increment it when I need to change BAUD, PARITY or the number of STOP BITS. Then, when I exit, I use a FOR - NEXT loop to be sure all of channels are closed. If I start out with the Port at 100, and increment it 4 times, I would close channels 100 - 103 like this:

```
FOR X = 100 TO Port
CLOSE X
NEXT X
```

I realize that this isn't absolutely required as AmigaBASIC is SUPPOSED to close all channels when you exit your program, but I have found that I start losing hunks of memory if I don't close them myself.
Tim Jones
Deltona, FL

What goes into a MountList file: If you are using a hard disk or one of the new devices that requires an entry in the MountList before it is usable, here are what those entries mean:

DH0: Device = harddisk.device
This is two things: First, it's the name that you will use to access the device; DH0: here. Secondly, it tells the system the name of the device driver that came with the device you will be mounting. You should pay attention to upper and lower case. The system will expect to find the device driver file in the SYS:Devs/ directory (where the MountList is also found).

Unit = 1
This tells the MOUNT command which (if more than one) device this particular entry applies to. The device numbering should be included with the device instructions.

Flags = 0
This is here to allow any flag bits that the device may require to be set. More information should be included with the actual device.

Surfaces = 4
This tells the MOUNT command how many physical surfaces will be involved with the device. It is usually the same as the number of heads in a disk device. For a floppy this would be 2.

BlocksPerTrack = 17
How many blocks or sectors can be found on a given track or cylinder. Used mainly for disks and pseudo-disks.

Reserved = 1
How many blocks or sectors are reserved for use by the hardware of a disk.

Interleave = 0
Interleave is useful when formatting a hard disk (I am unsure how this would be used with other devices) to allow for variations in the manner data is transmitted to the device.

LowCyl = 0 ; HighCyl = 292
This tells the MOUNT command how many sequentially numbered cylinders or tracks belong to the device. It is directly related to Surfaces and BlocksPerTrack on a disk device.

Buffers = 5
This tells the system how many 512K Byte hunks to set aside when the device is mounted for caching data that is transmitted in from or out to the device. You may change this in the CLI by using the ADDBUFFERS command.

BufMemType = 0
This tells the system what type of memory is required for the buffer. The types of memory are:
CHIP = 0
FAST = 1
CLEAR = 65535
You may use CHIP or FAST, but not both, and may specify CLEAR in conjunction with either.

#
The # indicates the end of this entry in the MountList. A MountList may contain as many entries as necessary providing they are separated by this symbol.
Tim Jones
Deltona, FL

Unprotect AmigaBASIC: If you have been playing around with the various methods of saving files in AmigaBASIC, you have, no doubt, found the ,p option. This option allows you to protect your file thus making unlistable or editable. There is one minor problem with it however, if you save a file that you do not have a backup of, you've lost it (for editing, that is) forever. Having lost one installment of my tutorial series to a foolish demonstration of this feature, I set out on a long and tedious journey through the various BBS's and electronic networks. I finally found a fix to this situation on People Link.

We've decided not to list the actual patches here because it defeats a significant protection scheme for many BASIC programmers. If you have a need for this information, write to this column care of the above address and we will get the information out to you.

One thing I would like to add, if you plan on using this patch to crack another person's program, please don't. They protected it for a reason. If you are really interested in their code, you could probably get it from them by simply asking for it.
Tim Jones
Deltona, FL (with thanks to the PLink gang!)

Law/The Law of Privacy

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tution also charges Congress with the responsibility for regulating commerce. The Commerce Clause for interstate commerce provides ample authority for BBS legislation.

> The home, in short, is the key — off-limits to the intrusive arm of government. And no less off-limits when using a computer at home.

The law of privacy has always been a contradiction in terms of a sort, and the development of BBS's only highlights the point. We want legislation to protect our privacy from others: credit card information, corporate data, for example. Yet we also want government not to go too far: not to legislate as an excuse for its own snooping. To a certain degree, the law of privacy and privacy legislation have always been "walking the tightrope." Electronic information only accentuates the problem.

Perhaps, however, electronic information has a different possibility for surpassing the constitutional hurdle. As McCoy explains:

"Commentators have suggested that improved security systems for computer bulletin boards could alleviate some of the proposed statutes' ill effects. With improved software mechanisms to screen bulletin board postings (e.g. preventing certain distasteful words from being posted, or requiring every user to identify a message by his name and verifiable telephone number), the chilling effect of any such laws could be counteracted."

Naturally, high tech alone will not provide a cure. For each step will eventually be bypassed by the high-tech criminal. But at least in "walking the electronic and constitutional tightrope," legislatures will not be alone.

"What we need are some cases to get us started," adds Millstein. How true. Walking a tightrope takes years of training and experience, but so far not a single law case. High tech moves so fast, the law so slowly. For the moment we are walking the privacy tightrope blindfolded — and without a net.

"Our only hope for now is the ethics of those who run BBS," says McCoy. Some solace, but not much for those who are realistic. ■

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then print a CR and go to line 120 to start the next directory line.

160 The directory byte was not null, so print it and go to line 150 to fetch the next byte of the logical directory.

Using the same method, you can get just the first and last lines of a directory, the header and blocks free message. To do this, add an extra colon to line 100:

```
100 OPEN 2,8,96,"$0:"
```

The rest of the routine is the same. This will print just the first and last lines of the directory.

The 1581 disk drive is the latest release in a new line of peripherals for the 128 and 64. Other recent products include the 1351 Mouse, the the 1750 and 1764 RAM expanders, and the CBM 1200 printer. Coming soon will be new versions of *GEOS* and CP/M that support the 1581 disk drive and sophisticated RAM-disk software for both the 64 and 128. The extra power and capacity of these new products will keep your Commodore system working for you for years to come.

RAM Memory

1581 RAM		1541 RAM	
$0000	Zero page, job queue	$0000	Zero page job queue
$0100	Stack	$0100	Stack
$0200	Work area, variables	$0200	Work area, variables
$0300-09FF	Data buffers (0 thru 6)	$0300-06FF	Data buffers (0 thru 3)
$0A00-0BFF	BAM buffers (7 and 8)	$0700-07FF	BAM buffer (4)
$0C00-$1FFF	Track cache buffer (20 blocks)		

■

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bonus level, extra points and balls are awarded. This level puts the icing on the cake in making *Bounder* a hit that is simple to play, yet addictive and challenging.

Captain Zapp

Captain Zapp places you as the title character against the evil Targ who is out to destroy the earth. You have 24 hours to save the planet by defeating Targ and his minions in combat. Ultimately, you must ride a space bike through a mine field on Targ's planet to reach him on his bike. Sounds like a Flash Gordon movie, huh? That's the kind of guy Zapp is, and you have a large task ahead of you in his guise.

Captain Zapp has three segments which you must complete in the 24-hour period before you get to see Targ face to face. Each segment is designed to keep you alert and busy with the joystick. The graphics are very good so that you don't have to worry about determining what it is you're looking at as opposed to what you have to do to it.

The first segment takes place in the jungle on Targ's world. You must make your way through the undergrowth to the Caves of Goram where the Prince of Goram will help you in your quest. This segment is by far the most interesting and complex of the three. You are literally caught in a maze of paths which lead to Prince Goram. The top half of the screen shows your position. The bottom half has a crude map of the jungle, the meaning and usefulness of which you must figure out on your own.

Various creatures fly toward you and drop on you throughout the jungle. By far the most deadly is the monkee that comes from above. You have to have a quick trigger finger to catch him; otherwise you're dead. These attacks, as well as falling in a ravine, take time away from your mission. You can only wait patiently until the clock has run down enough for you to heal your wounds. Most wounds take two to four hours of game time to heal. The clock will run down in a few seconds and you're ready to continue.

The most important things you're looking for in the jungle are the arrows pointing you toward Goram's dwelling. After you find the first one, the rest will fall into place quicker. Before you know it you'll be fighting the final beast at the entrance to Goram's cave. Watch out for the fire breathing Godzilla-like creature and the beehives — both are unavoidable.

The second segment is your battle with Prince Goram. If you defeat him he will give you a space bike to chase Targ. This part is difficult until you get used to the large variety of moves and attacks you can make. Each joystick position is used, both with and without the button pressed. I suggest that you practice the moves available in the practice segments provided on the other side of the game disk. There you play without scoring or a time limit.

> Mastertronic's *Shogun* faithfully captures the flavor of 17th century Japan as presented in Clavell's novel.

The final part of *Captain Zapp* is the fastest. There's no time to think — only to shoot at the flying guards who look like the flying monkees from *The Wizard of Oz*. The joystick controls the bike and height of the target guides. Blow away the guards quickly, for your energy level is low and you must pass through some energy gates before reaching the mine field.

The last segment takes place entirely from the biker's perspective, adding to the realism. This perspective, however, hurts you in travelling across the mine field. The mines come up so quickly that you barely have enough time to get by them. It took me about 30-40 games before I finally got by the mines. What came next was worth the effort — the final confrontation with Targ.

I won't tell you anything except that you have to be prepared for his appearance. He is carrying the missile controls that can destroy the earth and defeating him is a must. Getting rid of Targ is a fitting ending for the game, but don't think that because you know the climax that *Captain Zapp* isn't worth playing.

Shogun

When James Clavell wrote his masterpiece, *Shogun*, he probably didn't expect it to be translated into a video game. Mastertronic's *Shogun* faithfully captures the flavor of 17th century Japan as presented in Clavell's novel. Your goal in *Shogun* is to survive in a land overrun by political turmoil and power struggles, and ultimately become the military ruler of Japan.

You need a good memory and patience to do well in *Shogun*, because you must assume the role of one of forty possible characters from samurai to servant. By developing friendships and alliances, you gain followers; attracting twenty followers and completing a task demanded by the Buddha will give you Shogun status.

Shogun's land is graphically meticulous and beautiful, with many screens for you to explore. Although a small map shows the general location of different places, still other places are not mentioned. The only way to appreciate *Shogun* is to take a game or two to learn the land, for when the messages about other characters pop up on the screen, they are prefixed with a line telling where the characters are. Knowing where that location is and how you can get to it quickly aids you in helping a friend under attack or befriending a person you haven't met.

Characters are the heart of *Shogun*. Learning how to act towards them makes the game interesting. Only then can you instantly know which ones are loyal and which ones you need to win over to your side. BEFRIEND is your most important command. By remembering which characters are associated with others (via the messages that constantly appear on the screen) and befriending those who have the most power in the land, you'll quickly gain the followers you need to become the Shogun.

Shogun is played entirely with a joystick and all actions are performed by using icons at the bottom of the screen. Most are self-explanatory. The special ones important to winning the game are BEFRIEND, EXAMINE and ORDER. EXAMINE gives you information about a character that may be helpful in deciding to attack or befriend him/her. ORDER allows you to give commands to other characters. This function comes into play when you need someone to guard an area, befriend someone else, hold an item or attack another party if you are currently weak.

Shogun throws in a lot of randomness to make each game unique. The forty characters start in different areas of the land and the relationships they form without your participation change from game to game. That randomness hooked me on *Shogun*. By restarting a game, I was faced with a new challenge and new hurdles to jump to reach Shogun status.

My only advice is to learn the characters well, know the screens and areas and understand what options you have when put in a situation with another character. From Priest Yamaha to Zen Master Ikematsu, *Shogun* exposes you to the world of 17th century Japan in a unique video game concept.

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that they themselves write. The *Turbo Processor* shines when running home-grown BASIC programs containing complex mathematics. *Turbo Processor* will run these programs four times faster.

There is a dual-inline-package (DIP) switch-bank on the *Turbo Processor*. One of these switches is an On-Off toggle for an on-the-card potentiometer. This potentiometer lets you adjust the processing speed between the normal 1 MHz 64 speed, and the 4 MHz maximum speed. With the use of this potentiometer, speed reduction down to 100 KHz (1/10th of Commodore's original speed) is possible. You can reduce the speed if games are beating you and you want to go slower.

If you try to run European software on the U.S. 64s, the screens will shake and won't look quite right. The potentiometer allows adjustment of the speed of the Turbo 64 to compensate for the jittery screen. It won't solve all the problems with the European games, but it seems to work pretty well for timing problems.

For the more serious hacker, the remaining DIP switches start exemplifying the real potential of the *Turbo Processor*. One switch allows you to simply toggle out of Turbo mode. For this case, the control simply reverts back to normal 64 operation.

Another switch allows you to pick the operating system of your choice. Built on the *Turbo Processor* card is a 27256 CMOS EPROM (eraseable, programmable, read-only memory) containing two separate operating systems. One system is a copy of the 64 operating system. The second operating system is available for use with another Swisscomp device — a cable/integrated circuit kit that enables you to load programs from disk at ten times the speed.

There are an additional 8 kilobytes of space left in the existing EPROM where you can program your own operating system. Therefore, you can switch between any of the three operating systems. If you replace the 27256 EPROM with a 27512 EPROM, you will have 64K space for operating systems. If you have an EPROM program you can duplicate the first two operating systems, then add your own. Or, there would be enough extra space for you to add autoexecute programs, other operating systems, or any other programs.

Still another switch allows experienced programmers to maintain software control switching between "synchronous" and "asynchronous" operation of the *Turbo Processor*. With proper programming, processing speed can reach 4.5 MHz. Developers of the *Turbo Processor* have gotten as high as 4.8 MHz. Although there will be no screen display, internal processing of long programs will be done over four times the rate. (This mode would have to be turned on and off to disable/enable screen display.)

Software control between 1 MHz and 4MHz is also possible with the use of another of the DIP switches. Yet one more switch permits the switching between.1 MHz and 4MHz through hardware control. Although not a part of the DIP switch, there is a re-set switch on the *Turbo Processor* — a definite delight.

All of the above information should enable the commercial software user, or the occasional programmer to utilize much of the *Turbo Processor*'s capabilities. However, for the dyed-in-the-wool hacker, there's even more.

The on-board 65816 microprocessor is a 16 bit CPU, capable of addressing 16 megabytes of RAM. There are Presently two 32-K, 16-bit CMOS RAMs on board that are battery backed to prevent loss of programs when the 64 is shut off. The battery itself obtains a trickle charge when the 64 is on. EPROMS are 120 nanosecond speed, and also CMOS, to allow for the small battery power back-up.

If you want to use the full 16 bit capabilities of the *Turbo Processor*, you can't use the Commodore 64. If you want to build a new computer with I/Os, add-on hardware and a separate keyboard, the *Turbo Processor* is half-way there. It will require the video chips, and I/O chips. GTE and Western Digital are vendors for the CPU chip. For serious computer designers, however, the *Turbo Processor* manual is inadequate in its present form.

One design deficiency doesn't prevent its operation, but does make even the most serious electrical engineer shake — the lack of a case for the device. Although a case is in the works, Swisscomp is presently selling just the plug-in printed circuit board, fully assembled with mounted ICs.

One last note. The *Turbo Processor* will not work on the 128, even in the 64 mode. Because noise on the 128 expansion port is high enough, it interferes with the high-speed microprocessor.

Swisscomp offers a money-back guarantee and technical support from its offices in Florida.

In conclusion, while certainly a high tech marvel, your individual needs will have to determine if the benefits are worth the price. ■

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If you are a CLI user, there are two ways that you can use *AC/BASIC* to compile programs. By simply typing AC-BASIC at the prompt, you would follow the steps described for Workbench users above. Or, if you have saved your setup parameters as discussed above, you may compile the program by typing "AC-BASIC filename". Under this method, the program will be compiled and, assuming no errors were encountered, you will be returned automatically to the CLI.

If you wish to change the parameters using this method for a particular file, you may use command line arguments to set up new parameters without disturbing your default settings. I will discuss this method later when I describe the available functions.

One problem that occurs with the error reporting: when the compiler discovers a compile-time error, it reports the error to the screen or a list file, if one is being created, but does not return you to the CLI. Because of this, you must manually exit the compiler to edit your source file. I have spoken with representatives from Absoft and they tell me that a revision is in the works that will alleviate this and, assuming you are writing the errors to a ".lst" file, return you to the CLI to allow you to use a programmable editor (like *UEdit*) to automatically return to your source file (a la *Turbo PASCAL* from Borland) for easier debugging and error correction.

The compile-time options may be selected or deselected by using command line parameters when invoking the compiler from the CLI.

For example: AC-BASIC MYFILE TRC W48

This would instruct the compiler to place the TEMP files into RAM (T), Link the RUN TIME LIBRARY (R), Enable RUN-TIME error checking (C) and allocate 48,000 Bytes for the compiler's work area. This would, however, only affect only the file 'MYFILE' and any additional files would use the defaults that you saved or CLI compiler options similar to those shown above.

This brings us to the BATCH compile. By creating a text file that contains lines similar to the example above, you can specify a number of files to be compiled. Each file in the list can have its own set of compile-time options or use the defaults that you saved to disk. A sample BATCH compile file would look like this:

```
FILEone.BAS RTCE
FILEtwo.BAS
FILEthree.BAS RT
```

where FILEone.BAS will use the R, T, C & E options

FILEtwo.BAS will use the default options and FILEthree.BAS will use the R & T options

During a BATCH compile, error conditions are handled somewhat differently. In the event of an error, the compiler will halt, display or write the error list, and then prompt you with a requester asking if it should continue with the next file or abort to allow you to fix the errors. This occurs even if the error is in the last file in the BATCH list. To perform a BATCH compile, you must open the BATCH file and click on the BATCH COMPILE gadget.

The options that I have been talking about include using the LONG addressing mode, RUN-TIME error checking, decimal math, error lists, default all arrays to static, and so on.

As you can see, *AC/BASIC* gives you full control of the manner in which your AmigaBASIC program is compiled. Among the items that I have touched on, the most important ones are the Meta-Commands. These commands allow you to control the compilation from within your program. Meta-Commands are entered as remark statements using either the REM keyword or the tic ('). The available Meta-Commands are;

```
REM $IGNORE { ON | OFF }
REM $INCLUDE "FILENAME"{/L}
REM $PAGE
REM $OPTION +/-
    { COMPILER OPTIONS }
```

If you are entering sections of code that apply to the interpreter but will cause the compiler to do something unnecessary (such as performing a MENU RESET when ending), you would surround the offensive section with $IGNORE ON and $IGNORE OFF.

In many situations, you might create SUB programs and modules that you would MERGE while using the interpreter. Since a compiled program cannot use the MERGE command, you would use the $INCLUDE Meta-Command in the same manner as the MERGE command in AmigaBASIC. This would INCLUDE the statements in the modules into your source file while it is being compiled. Here is an example using $IGNORE and $INCLUDE.

```
REM $IGNORE ON
MERGE "MergeFile"
REM $IGNORE OFF
REM $INCLUDE "MergeFile"
```

This would perform the same function in both the interpreted and compiled versions of the program.

The $PAGE Meta-Command allows you to put page breaks in the LIST file making it easier to format certain sections of your code. Whenever the compiler sees the Page command, it inserts a page break in your .lst file.

The final Meta-Command allows you to manipulate the A and C compile options from within your program. If you are using $OPTION, a + turns the option on and a − turns it off. This allows you to selectively trap events or perform long branching. In the event of event handling, you may have sections of code that you wish to speed up by not checking for event interrupts. By turning the C option off going into the routine and back on upon exiting, you will speed up the operation of that segment.

In tests performed against the interpreter, the compiler's results are listed against the interpreter's.

Overall, I feel that the *AC/BASIC* compiler is a very complete and usable package. Absoft has gone to great lengths to ensure compatibility with the interpreter (which, in some cases, degrades the performance of compiled programs). Also, they offer very knowledgeable and courteous customer support. The number is not toll-free, but most questions can be answered in a very short time period, or they will review your problem off the phone and call you back with the result. If you are an AmigaBASIC programmer who has been unsatisfied with the results of your efforts due to speed and performance restrictions, then I strongly recommend *AC/BASIC*.

	Interpreted	Compiled	Function
Test #1	11.45152 s	1.703125 s	Count and ADD
Test #2	19.92159 s	13.53906 s	PRINT to SCREEN
Test #3	3.099609 s	1.640625 s	Use LINE to FLOOD SCREEN
Test #4	.940039 s	.703125 s	Use BOX FILL with RND colors

Software Reviews/Dr. T's 128 Sequencer

Continued from pg. 38

anywhere else if you'd like to give them a try. In terms of controlling music sequences, the *C128 KCS* is a major improvement over the already impressive 64 version. In both versions you can start and stop up to 35 sequences in real time from the keyboard.

The chaining and "nesting" of control sequences is essentially unrestricted. From any control sequence you can call music sequences, other control sequences, or any arbitrary combination of the two. With the *C128 KCS* you can access built-in control sequences that will automatically arrange music sequences as you record them.

Is *Dr. T's KCS* hard to use? the program is menu-drive and straightforward recording, overdubbing, autoquantizing, and playback of musical sequences can be done with very little effort; there are no fancy combinations of keystrokes to learn or screen icons to interpret. The only possible criticism I can think of (and it's not one I would make) is that the *KCS* does not always behave in a musically intuitive way. If you are a musician with some multitrack recording experience, no computer experience, and a keyboard technique that generally allows you to play in real time all you want to hear, you do not need this program. However, if you are a computer-literate person or an open-minded musician with musical ideas that go farther than your technique, I think you will find this program logical and easy to use. The manual is plain —no pretty pictures — but thorough. The more advanced features can easily be learned one at a time when and if you need them just by selecting them from a menu and following the prompts.

Music files created with the 64 version can later be used by the 128 version without modification. Dr. T offers excellent user support if you need additional help. If you already have the *64 KCS*, Dr. T offers a 100% trade in allowance toward the purchase of the 128 version. The original purchaser is entitled to one $10.00 backup copy of the protected program disk. I can't imagine fairer treatment than that.

In conclusion, *Dr. T's KCS* is a pace setting music program for your 128. It may seem expensive, however, it is competitively and reasonably priced in the context of assembling and getting the most out of a MIDI system. In return for this investment you will get a thoroughly supported program that should give you all the features you will ever need in a MIDI sequencer. C

Hardware Reviews/Mini Chief

Continued from pg. 46

fastload routine, Berkeley and ICT have expressed a willingness to resolve the problem.

The hard drive is not appreciably faster than the 1571 floppy, and in some instances it's slower. To remedy this ICT has included a Turbo loader which does decrease loading time as well as file access. The hard drive is also compatible with the Epyx Fast Load cartridge. In regard to 128 load time the hard drive is a little slower than the 1571. In order for ICT to maintain compatibility with the slower Commodore serial bus they had to slow the drive's transfer rate down. Although the hard drive itself functions at full speed the ICT interface feeds the data to the serial bus at a speed it can handle. Since the Commodore fast serial bus is running just about as fast as it can it would be unrealistic to expect the hard drive to do much better.

The *Mini Chief* excels in regard to compatibility with the current Commodore DOS, making the hard drive work in much the same fashion as a standard Commodore floppy drive. Quite an accomplishment I would say. I've gone over the commands and modes of operation and it's quite plain that the hard drive is indeed very user friendly.

I did encounter a few minor problems with the hard drive. When you enter a wrong hard drive command it has a tendency to lock up — sometimes it seems to lock up for no apparent reason, although I've found that 95% of the lockups I experienced were due to operator error. Furthermore, any lockups can be resolved by resetting the drive or turning it off for ten seconds and then back on again. Another problem is with partition H1. ICT originally had special plans for this partition, so with this in mind they allocated it in a special way to the hard drive operating system. Sometimes when performing an operation involving partition H1, you get strange results.

Now the big question, what's the bottom line on this new hard drive? For $795.00 you get a 20 MB hard drive with a 1571 disk drive, all necessary cables as well as a one year warranty on parts and labor. If you already have a 1571 and want to upgrade, ICT has an excellent upgrade policy. In working with ICT's *Mini Chief* I find that it increases user productivity. It takes Commodore computers to new heights of sophistication putting them on the same level with the so-called more advanced, higher-priced business computers. I highly recommend the *Mini Chief*. C

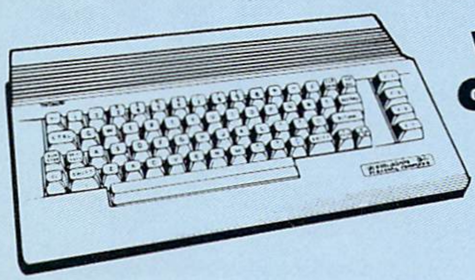
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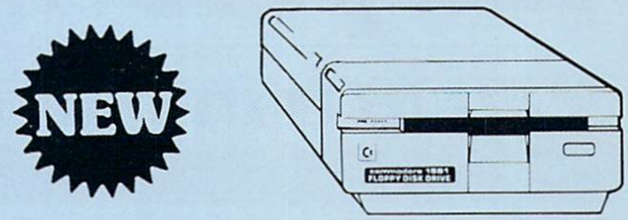
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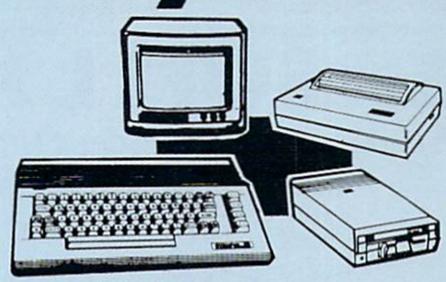


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The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN-,RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the 'wrong' line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88) characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line of more than 80 (or 88) characters.

''[HOME]'' = UNSHIFTED CLR/ HOME
''[CLEAR]'' = SHIFTED CLR/HOME
''[DOWN]'' = CURSOR DOWN
''[UP]'' = CURSOR UP
''[RIGHT]'' = CURSOR RIGHT
''[LEFT]'' = CURSOR LEFT
''[RVS]'' = CONTROL 9
''[RVOFF]'' = CONTROL 0
''[BLACK]'' = CONTROL 1
''[WHITE]'' = CONTROL 2
''[RED]'' = CONTROL 3
''[CYAN]'' = CONTROL 4

''[PURPLE]'' = CONTROL 5
''[GREEN]'' = CONTROL 6
''[BLUE]'' = CONTROL 7
''[YELLOW]'' = CONTROL 8
''[ORANGE]'' = COMMODORE 1
''[BROWN]'' = COMMODORE 2
''[L. RED]'' = COMMODORE 3
''[GRAY1]'' = COMMODORE 4
''[GRAY2]'' = COMMODORE 5
''[L. GREEN]'' = COMMODORE 6
''[L. BLUE]'' = COMMODORE 7
''[GRAY3]'' = COMMODORE 8

''[F1]'' = F1
''[F2]'' = F2
''[F3]'' = F3
''[F4]'' = F4
''[F5]'' = F5
''[F6]'' = F6
''[F7]'' = F7
''[F8]'' = F8
''[POUND]'' = ENGLISH POUND
''[SHFT ^]'' = PI SYMBOL
''[^]'' = UP ARROW

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY (''[SHFT Q,SHFT J,SHFT D,SHFT S]'') OR THE LETTERS CMDR (COMMODORE) AND A KEY (''[CMDR Q,CMDR G,COMDR Y,CMDR H]''). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA (''[SPACE3,SHFT S4,CMDR M2]'').

THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is 'running'. Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

Commodore Magazine
1200 Wilson Drive
West Chester, PA 19380
ATTN: Program Problem

Have fun with the programs!

HOW TO USE THE MAGAZINE ENTRY PROGRAMS

The Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements, the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL (RETURN) on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

NO CHECKSUM: This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

QUOTE: This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

KEYWORD: This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT..) incorrectly. Check the line in the magazine again and check your spelling.

OF CHARACTERS: This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

UNIDENTIFIED: This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

The Magazine Entry Programs are available on disk, along with other programs in this magazine, for $9.95. To order, contact Loadstar at 1-800-831-2694.

```
10 PRINT"[CLEAR]POKING -";
20 P=49152 :REM $C000  (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT"[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>86200 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0
1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END
```

END

```
5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864 :REM $1300  (END AT
   5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>59311 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
    1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41
1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,C0,06,10,03
1041 DATA 4C,69,14,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END
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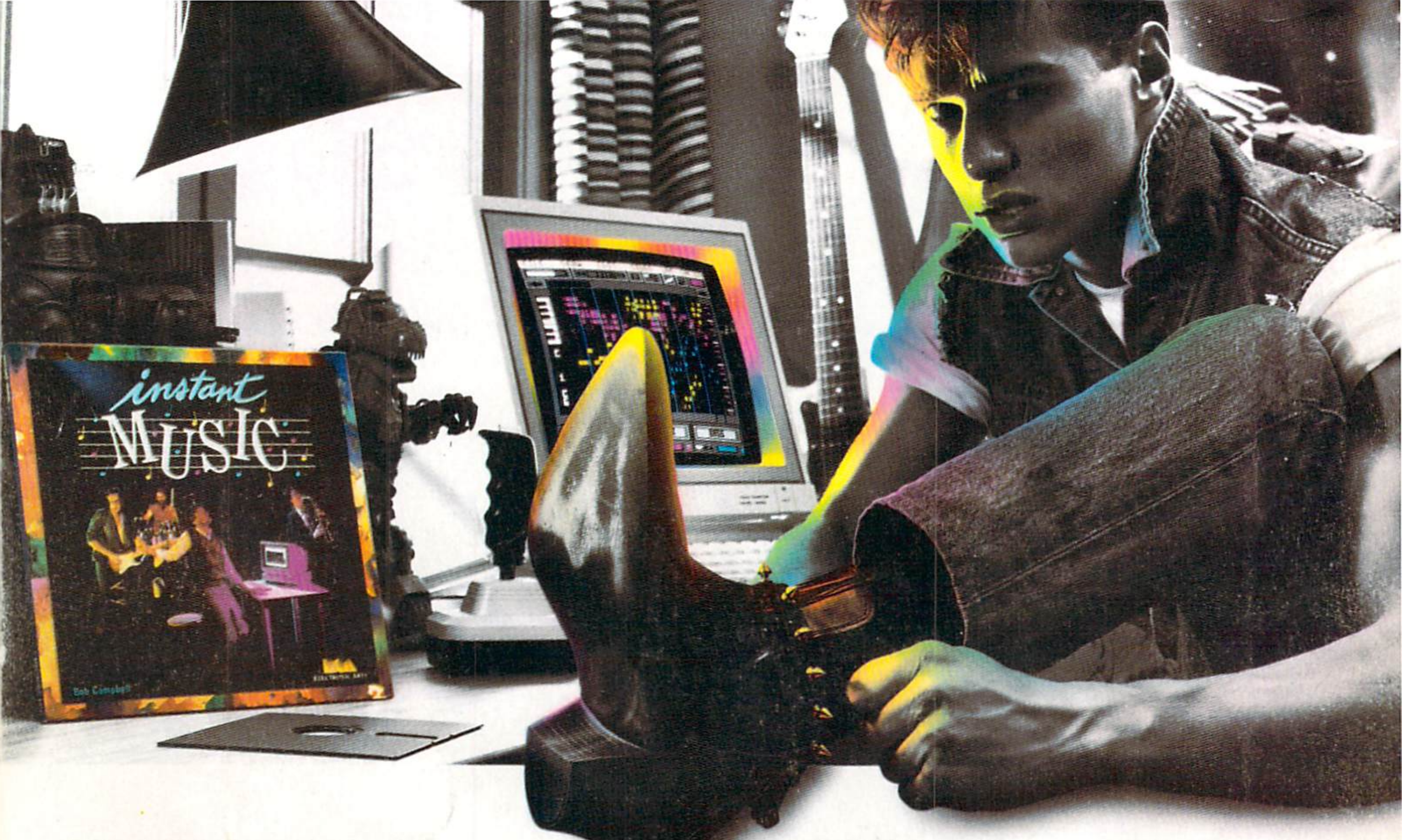
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